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Readings in History

Delhi: Ancient History

Edited by

Upinder Singh

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Delhi: Ancient History

Not many people know that the busy and bustling capital city of Delhi and its surroundings have a long past, going back thousands of years. Prehistoric stone tools have surfaced here and many ancient remains have been found, sometimes accidentally by farmers tilling their fields, and at other times by archaeologists carrying out systematic excavations. A mound one passes everyday or a narrow strip of stream tells a story of ancient times. Centuries of history coexist with metro stations and plush cars.

The readings in this book give us glimpses of the lives of people who lived over the centuries in the Delhi area, and how these details are pieced together by historians. It brings into focus the importance of the historian's method and the sources of information found in ancient texts, archaeology and even legends and folklore, sometimes hanging on the thread of a slender historical fact.

The editor of the volume, points to the urgency of further exploration and documentation to fill in the still all-too-meagre details of Delhi's ancient history. However, she ends on a note of caution, bordering on alarm, when she points out that invaluable evidence of the city's past is being extensively destroyed due to quarrying and the construction of new roads and buildings. Such activities are an integral part of the modernization of a living city but the balance between modernization and the preservation of ancient remains is indeed very fragile and needs to be maintained from an informed and realistic perspective.

Upinder Singh teaches ancient Indian history at the University of Delhi. She is the author of *Kings, Brahmanas and Temples in Orissa: An Epigraphic Study (A.D. 300-1147)* (Delhi, Munshiram Manoharlal, 1994), *The Discovery of Ancient India: Early archaeologists and the beginnings of archaeology* (Delhi, Permanent Black, 2004) and *Ancient Delhi* (Delhi, Oxford University Press, 1999, 2nd edition with a new Preface and Introduction, 2006).

This collection of essays has been put together by a teacher for students of history, but will also be of enormous value to a large number of other interested readers.

Other books in the series:

Cultural History of Modern India
Edited by Dilip M. Menon

Cultural History of Medieval India
Edited by Meenakshi Khanna

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WE GRATEFULLY ACKNOWLEDGE ALL AUTHORS AND PUBLISHERS WHO HAVE BEEN generous in allowing us to excerpt their works in this book of readings. We have had to make some minor editorial changes and reductions in the interest of our readers. In a few chapters, there is some overlap in content. This has been unavoidable, as the essays have been drawn from various sources.

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25 July 2006

Introduction

DELHI'S HISTORY IS ETCHED OVER ITS LANDSCAPE IN STONE. MAGNIFICENT FORTS, mosques and tombs of the Sultanate and Mughal periods evoke the aura of the medieval world while the stately layout and architecture of Lutyens' Delhi bear the imposing imprint of British imperial rule. Apart from the well-known monuments that symbolize the power of those who ruled here (e.g. the Qutb Minar, Red Fort, Humayun's Tomb, the Viceroy's residence, the Secretariat and Council House), glimpses of the city's eventful history can also be seen in countless other places. These include the narrow *galis* and *havelis* of Chandni Chowk, the *dargah* of Sheikh Nizamuddin Auliya in Nizamuddin, the Flagstaff on the ridge near the main gate of Delhi University, St. James' Church in Kashmiri Gate, Delhi College near Ajmeri Gate and the Coronation Park near Kingsway Camp.[1] The structures and spaces proclaiming independent India mainly consist of memorials to deceased national leaders. Several colonial monuments have been converted into symbols of national identity through marginal modification, the sheer fact of their new function and occupancy, or through announcement.[2] But where are Delhi's ancient remains?

The Delhi area has an incredibly long and eventful ancient past, beginning thousands of years ago in the stone age and merging at the other end into the medieval period when the Rajputs made way for Delhi Sultans in the twelfth century. This collection of readings aims at making people aware of this history. It is inspired by the idea that history does not necessarily have to be something distant and remote that one reads about in books; it can be something exciting whose relics one can often see in the immediate neighbourhood, something which one can imagine, explore and enjoy. The ancient history of the Delhi area also opens up many other issues, such as the different types of sources historians use, how they interpret the evidence from these sources, the distinction between well-established facts and the grey areas of continuing doubt and debate. Further, since Delhi occupies a space that has been lived in over many millennia, it gives many fascinating examples of the interface between the ancient, medieval

and modern, which makes it possible to reflect on the connections, continuities and ruptures across the ages.

The writings collected in this book deal with various phases and facets of Delhi's ancient and early medieval past. They give us glimpses into the lives of people who lived in the many settlements—some rural, some urban—located in this area over the centuries. Since the boundaries of states and cities with which we are familiar did not exist in ancient times, we are justified in surveying the evidence from the National Capital Region, which includes the National Capital Territory of Delhi as well as neighbouring areas such as Faridabad and Gurgaon in Haryana and Ghaziabad, NOIDA and Greater NOIDA in Uttar Pradesh.

Some of the readings are fairly technical and detailed and may make for somewhat terse and dry reading. This is because they have been written for professional historians and archaeologists. In order to understand and appreciate the readings, it is essential to decode the scholarly language and technical vocabulary and to identify the basic data and arguments. It is also necessary to go beyond the text by reading around and expanding on the larger context and implications of specific details. It is possible to visit the places mentioned in the excerpts, to see the objects they describe, and to animate their details through imagination.

The Sources of Delhi's Ancient History

References to Delhi's history in ancient literature frequently take the form of legends, which have to be examined carefully and critically. Myths cannot be treated as historical facts but they sometimes encode historical elements in an indirect way. The same applies to local traditions, i.e. beliefs that are current in a place about that place. In some cases, these traditions have been recorded and written down, but more often than not, they survive in people's memory and in the form of oral narratives.

The legends about how Delhi got its name are good examples of myths and local traditions that reflect interesting claims and connections, even though they are clearly not historical facts. One such legend, recorded in medieval texts, connects Delhi with the epic king Dilipa. Giving historical persons and places legitimacy and prestige by anchoring them to the epic-Puranic tradition was a practice that is encountered in other contexts as well, for instance in royal genealogies in ancient and early medieval inscriptions. Another more colourful legend, recorded in Rajasthani bardic literature, connects the founding of Dilli with the Mehrauli iron pillar, the Rajput king Anangapala Tomara and a serpent demon Vasuki.[3] This too is obviously a myth. However, it is a myth woven around a single, slender historical fact—the establishing of a political centre in Delhi by Anangapala.

Apart from the few references in indigenous and foreign literary sources, more direct clues to Delhi's ancient past lie in archaeology, the discipline which deals with the human past as it is revealed through material remains. Archaeological data includes artefacts (objects made by humans) and other tangible remains such as structures, burials, plants and bones. Taken together, such data can tell us quite a bit about the every-day lives of ancient people. Pottery is an especially significant type of artefact, not only because it was an important part of daily life, but also because archaeologists can identify various types of pottery with cultural sequences and specific periods of time.[4] Archaeologists use the term 'culture' in a technical sense for recurring assemblages of material traits. One of the issues that needs to be explored is how this technical sense of 'culture' can be linked to the wider meaning of the word, which includes within it all the patterns of behaviour which an individual learns and absorbs from the larger social group.

The remains of ancient sites in the Delhi area are sometimes visible in the form of mounds. A few of these (such as the Purana Qila, Bhorgarh and Mandoli) have been excavated, but many more have not. The remains embedded deep in ancient sites often get disturbed due to human activities such as farming or construction and find their way to the surface. Because of this, it is possible to get clues to the ancient history of a site by a careful survey of what lies on its surface. This sort of archaeological exploration does not require fancy equipment or huge sums of money. It requires planning, energy, a recognition and understanding of ancient remains and an ability to accurately document and describe them.

The history of Delhi—or any other place for that matter—cannot be treated in isolation. It has to be understood within larger frames of reference. To do this one has to contextualize this history within the larger patterns of political, socio-economic and cultural history of northern India or of the subcontinent as a whole. But it is equally if not more important to look closely at the relationship between settlements in the Delhi area and their immediate physical environment and with settlements elsewhere. This gives us a different kind of history, one whose textures and rhythms differ from those of the larger, conventional, macro-level historical narratives we are used to, but which is perhaps a more meaningful way of understanding the way of life of ancient people.

The Ancient Environment

The history of people and their settlements is intimately connected with the specificities of their physical environment. The basic physiography of the Delhi region, using local terminology, consists of the *kohi* or *pahari*, the *khadar*, the *bangar*, and the *dabar*. The *kohi* or *pahari* are the hills, which we know as the different sections of the Delhi ridge. The *khadar* or the 'new alluvium' consists

of the more recent deposits of the Yamuna river. To its west lies the *bangar*, the higher 'old alluvium' created by the deposits set down by the river in its older courses long, long ago. The *dabar* is a low-lying, flood-prone area in south-west Delhi. It lies to the west of the hills and consists of the catchment area of the streams that flow westwards from them.

The contours of the physical landscape of Delhi as we see it today, including its flora and fauna, are in many ways very different from what they were thousands of years ago. Take the case of the various sections of the ridge, which consists of four parts—the Southern, South-central, Central/New Delhi, and Northern/Old Delhi sections. Together, these constitute the very eroded, northernmost extensions of the Aravallis, the oldest mountains in India, formed hundreds of millions of years ago. The Aravallis stretch across from Gujarat into Rajasthan and Haryana and enter Delhi from Gurgaon in the southwest. The hills run through the city in a roughly north-eastern direction, terminating in Wazirabad in north Delhi on the right bank of the Yamuna. Today, the height of the rocky outcrops of the Delhi ridge range between 2.5 m and 90 m above the flood plain in north and south Delhi respectively. In ancient times, they must have been much higher.

Those who enjoy the 'natural' (though somewhat manicured) scenic beauty of the northern ridge on their morning walks may not be aware of the fact that the forest here is largely an artificial creation. The first steps in the 'vegetal renovation' of sections of the northern and central ridge took place during the years after the 1857 revolt and the major afforestation of the central ridge happened after the British shifted their capital to Delhi in 1912. The original vegetation of the ridge can be inferred from the Rajasthan Aravallis or, closer home, from the small Mangarbani forest lying to the south of Delhi, on the border with Faridabad.[5] There is no doubt that in ancient times, the flora and fauna of the ridge was radically different from what it is today.

The Yamuna is another major landmark of Delhi's physical landscape. With its depleted and polluted waters, the river cuts a rather sorry figure, attracting attention only during the monsoons when it often swells above danger levels. But the Yamuna has a long and eventful history and has played an important role in the history of settlements in the Delhi area. Geologists suggest that the river once flowed into the Ghaggar-Hakra and had a much more westerly course. Over time, it tended to move more and more eastwards, until it finally joined up with the Ganga. The *jhils* (lakes) at Najafgarh, Surajkund and Barkhal represent remnants of the Yamuna's old courses.

While the Yamuna is the major perennial river flowing through Delhi, the smaller streams are also important. These have often taken the form of *nalas* noted by the urban population of Delhi more for their dirty, stinking water than for their ecological or historical importance. Some of the old streams have dried

up completely, others carry much less water than they once did. Several streams, the most important of which is the Bhuriya *nala*, emerge and flow eastwards from the hilly stretches of Ballabgarh, south of Delhi. Ancient settlements often tended to cluster in the catchment areas of such water resources.[6]

There is so far very little detailed work on the palaeo-environment (the old or ancient environment) of the Delhi region. Grover and Bakliwal's short article illustrates how modern scientific techniques of satellite imagery can give significant information about ancient landscapes, and therefore remains important.[7] Charting six successive stages in the migration of the Yamuna, Grover and Bakliwal's major conclusion is that the river's migration ranged over about 100 km in the northern and western parts of Delhi to 40 km in the south. About 4,000 years ago, the river apparently flowed through the Badarpur hills. It gradually moved eastwards into the plains area till it came to flow closer to, and then, along its present course.

Prehistoric StoneTools

The part of the human past covered by written records is very miniscule. Prehistory—history before writing—is the longest part of the human past, and stone tools are its most ubiquitous remains. An understanding of prehistoric remains requires an understanding of the vocabulary and terminology used by prehistorians. This includes the classification of the stone age into three broad phases—palaeolithic, mesolithic and neolithic—on the basis of geological age, typical stone tools, and subsistence base (i.e., how people obtained their food). It also requires a familiarity with the basic stone tool types and the technologies involved in crafting them.[8]

Since 1956, when Surajit Sinha found four lower palaeolithic tools near the main gate of Delhi University, many more discoveries have been reported, and it is clear that stone age humans found Delhi's habitat suitable for their purposes. Stone age sites tended to be concentrated in the rocky areas of the ridge where animal and plant food, water, shelter, and raw materials for making tools were available in adequate quantities. The stone tools documented so far range from lower palaeolithic artefacts to tiny stone tools known as microliths. Specific dates are unavailable, but a rough guess is that human activity in this area may go back to around 100,000 years.

Anangpur in the Badarpur hills is the only excavated stone age site in the Delhi area.[9] The thousands of palaeolithic tools found in the course of the excavations indicate that this was an exceptionally large prehistoric habitation site and also a factory site (a site where stone tools were made). A.K. Sharma and his team connected the stone tools found at Anangpur with the remains of palaeo-channels (old channels) of the Yamuna, identified via Landsat imagery.

As mentioned earlier, archaeological exploration in the form of a careful survey of artefacts and other features found on the surface of the ground can yield valuable results. Chakrabarti and Lahiri's 1985–6 survey of stone age sites in the Aravalli stretches of south Delhi and adjoining areas of Haryana resulted in the discovery of forty-three sites ranging from the lower palaeolithic to the microlithic.[10] Many more stone age sites are no doubt waiting to be discovered and there is a great need to extend the search for prehistoric stone tools to other parts of Delhi. More research is also required into the details of the prehistoric environment. All this would add considerably to the information on the prehistory of the Delhi area, so that it becomes more than just a catalogue of sites and tools.

Protohistoric Remains

'Protohistory' and 'protohistoric' are words that are used in different senses by scholars. They can refer to non-literate cultures mentioned in the written records of contemporary literate cultures. Or they can be used for literate cultures (such as the Harappan civilization) whose script has not yet been deciphered. They can also refer to periods for which we have literature, but no evidence of writing. Archaeologists often use the term protohistory to cover cultures stretching from the beginning of food production to the advent of iron technology.

The most significant protohistoric remains in the Delhi area are the late Harappan remains at the sites of Bhorgarh near Narela and Mandoli near Nand Nagari. The late Harappan culture represents the post-urban phase of the Harappan or Indus civilization. The evidence from late Harappan sites clearly indicates that the civilization did not come to an abrupt end, rather it underwent a progressive 'ruralization.' The reasons for this phenomenon remain the matter of a fascinating, on-going debate.[11]

B.S.R. Babu, who directed the Bhorgarh and Mandoli excavations, has summarized the major finds.[12] Among the most spectacular discoveries were two graves (one with grave goods) at Bhorgarh. The location of these two late Harappan sites in the Delhi area is not surprising as many sites of this phase have been found in Haryana and western Uttar Pradesh. However, B.R. Mani has raised doubts about the description of the earliest levels at Bhorgarh and Mandoli as late Harappan.[13] This can be used to discuss the crucial role of interpretation in archaeology at levels ranging from the classification of artefacts to making historical inferences.

The documentation of ancient sites has to take into account the specificities of terrain, soil and climate that are so crucial to the quality of human life. A preliminary survey by R.C. Thakran gives glimpses of possible protohistoric and early historic remains in north-western Delhi and tries to relate them to

their physiographic setting, specifically the *khadar* and *bangar*.[14] There is much that remains to be discovered and worked out in relation to the protohistoric settlement history of the Delhi area.

While recognizing the significance of the discoveries made at the earliest levels at Bhorgarh and Mandoli, it is equally important to note that these form part of a much longer cultural sequence. Mandoli was occupied from about the second millennium BC to the sixth century AD, while the occupation of Bhorgarh extended from about the second millennium BC to the sixteenth-seventeenth century AD. Thus, both sites provide a sort of archaeological snapshot of different stages in the history of old settlements in the Delhi area. At Bhorgarh, remains of medieval structures made of *lakhori* bricks (slim bricks used in medieval times) were noted, but the medieval levels were too disturbed to yield much detailed evidence. An investigation of archaeological data from medieval settlements is likely to give valuable insights into every-day life in those times, insights that would not be so evident from Persian court chronicles or fabulous royal monuments.

Ancient Indraprastha and the Purana Qila

There are many different views on the historicity of the great Sanskrit epic, the *Mahabharata*. Is the story a myth, or does it have a historical kernel? Did the *Mahabharata* war ever happen? If so, when? Was ancient Indraprastha located at the Purana Qila (Old Fort) in New Delhi? Scholarly opinion is divided on such questions.[15] Rather than simply cataloguing the different views, it is useful to look at the sorts of evidence and arguments that have been marshalled in the course of this interesting debate.

If you visit the Purana Qila, you will notice the upward gradient as you walk from the road towards the entrance gate. This is because the fort rests on a mound which marks an ancient settlement. The site was excavated over many years from the 1950s onwards. Brief information about the goals and results of these excavations appeared from time to time in *Indian Archaeology—A Review*,[16] but unfortunately, the full report has not yet been published. The excavations revealed a sequence from the Northern Black Polished Ware (NBPW) phase (the dates of this phase range anywhere between the seventh century to the second-first centuries BC) to the medieval period. Pieces of Painted Grey Ware (PGW) were found on the surface, suggesting that an even older settlement, possibly going back to c. 1000 BC, may have been located nearby.[17]

There is a strong belief—the earliest records of this are in fourteenth century texts—that the Purana Qila marks the site of ancient Indraprastha, capital of the Pandava heroes of the *Mahabharata*. The *Mahabharata* describes the massive walls of the city enclosing magnificent buildings, lakes, and gardens and housing

people from different walks of life. The description of the great assembly hall of Indraprastha in the Sabha Parva, translated from the Sanskrit into English by van Buitenen, provides an entry point into the grand drama of the epic.[18] The background is an episode narrated towards the end of the Adi Parva, the first book of the epic: Arjuna and Krishna help the god Agni burn down the Khandava forest. Only three survivors emerge unharmed from this terrible fire—a serpent named Ashvasena, four birds and a demon-architect named Maya. Maya wants to express his thanks to Arjuna, and Krishna suggests that he could do so by using his talent to build a great assembly hall in the Pandava capital.

When we juxtapose the *Mahabharata* descriptions of Indraprastha and its grand assembly hall with the brief details of the results of the Purana Qila excavations, we are faced with the following undeniable fact: There is no comparison between the colourful description of the city in the epic and the bland, stray pieces of pottery that represent what may have been the earliest settlement at or near the Purana Qila. This is not surprising. The *Mahabharata* is a work of imagination (even if it may have been woven around a historical kernel of events) composed over many centuries between c. 400 BC and AD 400. On the other hand, archaeological evidence, by its very nature, reveals the tangible objects of every-day life and is not very helpful when it comes to giving information about specific persons or events.

B.D. Chattopadhaya's discussion of the correlations between archaeology and the Sanskrit epics[19] raises a number of important questions: What sorts of history can be extracted from the epics? Are the epic characters and places real or imaginary, or a mixture of both? What are the implications of the problematic term 'epic age'? While some archaeologists and historians have argued that the *Mahabharata* legend was woven around certain characters and events that may have happened in c. AD 1000, the archaeological data from the Purana Qila or any other site is unlikely to provide clinching evidence for or against this. Ultimately, there is no way of conclusively proving or disproving whether the Pandavas or Kauravas ever lived or whether they fought a bitter war against each other. The limits of the evidence must be acknowledged and A. Ghosh's word of caution in this respect is important.[20] However, regardless of whether the war was ever fought or whether the site of the Purana Qila had anything to do with Indraprastha of epic fame, the archaeological evidence does prove that it was the site of one of several very ancient settlements in the Delhi area.[21]

Remains of the Historical Period

From the early historical period, which in north India began in c. 600 BC, the Delhi area acquired a strategic commercial importance. Due to its location in

the watershed between the Indus and Ganga river systems, at the gateway to the Ganga plains, it was well-placed on the Uttarapatha—the major trans-regional route of travel, trade and communication of north India. This route stretched from the north-western part of the subcontinent, across the Indo-Gangetic plains up to the port of Tamralipti at the Bay of Bengal. The northern sector of the route ran through Lahore, Jullundar and Saharanpur, along the Ganga plains to Bijnor, and then through Gorakhpur, into Bihar and Bengal in the east. The southern sector connected Lahore, Raiwind, Bhatinda, Delhi, Hastinapur, Kanpur, Lucknow, Varanasi and Allahabad and then moved on towards Pataliputra and Rajagriha. Many feeder routes intersected with the main arteries of the Uttarapatha.[22] These connected settlements in the Delhi area with others such as Mathura, Taxila, Varanasi, Shravasti and Kaushambi. They also linked up with routes leading into Rajasthan, central and southern India and beyond.

Settlements of the early historical period in the Delhi area can be identified through the presence of Northern Black Polished Ware (NBPW) pottery and archaeological levels belonging to the early centuries AD.[23] Although these levels are often referred to as 'Mauryan' or 'Shunga-Kushana' in archaeological writings, political history and archaeological cultures do not neatly dovetail into each other. The chronologies of political history are based on the rise and fall of kingdoms while those of archaeological cultures are based on the changes in the material relics of the daily life of ordinary people. The cultural vibrancy of the period c. 200 BC–AD 200 is evident from the coins, seals, terracottas and other artefacts found at the Purana Qila.

A more visible but not especially well-known witness to these centuries is the rock bearing an inscription of the Maurya emperor Ashoka (269–32 BC) just off Raja Dhir Singh Marg in Srinivaspuri/Bahapur, close to Nehru Place.[24] The inscription is a version of Ashoka's Minor Rock Edict I and this is the only Ashokan inscription in Delhi that is *in situ* (in its original place). The account of how it was discovered and identified, just before the rock was on the verge of being blasted away, shows the accidental manner in which major historical finds are often made, and the vulnerability of ancient remains in the face of the aggressive agencies and agendas of urban expansion.

The Srinivaspuri edict suggests that the Delhi region was part of the Maurya Empire. The inscription can be used as an introduction to a discussion of early Indian scripts and languages, the classification and distribution of Ashokan inscriptions, their contents, and the nature of Ashoka's *dhamma*. The two versions of the text and translation of the Srinivaspuri edict can be compared.[25] D.C. Sircar was one of the most skilled of Indian epigraphists. However, his assertion that the Srinivaspuri edict proves indirectly that Indraprastha was one of the flourishing cities of the Mauryan age is questionable. While some

place of importance must certainly have been located in the vicinity of the rock edict, exactly which one it was and what it was known as, is uncertain.

Remains of the period c. 300–600 AD have been found at sites such as the Purana Qila and Mandoli. But the most striking and best known is the iron pillar in the Jami Masjid in the Qutb complex in Mehrauli. Many think that this is an Ashokan pillar, no doubt because of the large number of pillars that this Maurya emperor erected. But Ashoka's pillars were made of sandstone, while this one is of metal. The iron pillar raises a number of interesting questions such as its exact metallic composition and original location.[26] Scientific analysis has shorn the pillar of some of its mystery and has demonstrated that although it is an impressive example of ancient metallurgy, it is not entirely rust-free.

Just as enigmatic as the pillar is the major inscription on its surface. This evokes the memory of a great king in elegant and evocative Sanskrit.[27] The question is: Who was the king eulogized in the inscription? The strongest contender is the Gupta king Chandragupta II (AD 375–413/14), but there are others as well.[28] The inscription provides an entry point into discussing other issues such as the evolution of the Brahmi script, the increasing use of Sanskrit in royal inscriptions, and the way in ancient Indian political history is constructed.

The Early Medieval Period

Today, one of the most important aspects of Delhi's personality is its role as a capital city, the premier centre of political power and activity in India. In ancient times (leaving aside the debatable issue of Indraprastha), the first time the city clearly assumed such a role was in the early medieval period during the time of the Tomara Rajputs. The relics of Tomara rule can be seen in the ruins of a fort and stone masonry dam at Anangpur village and in the citadel of Lal Kot.[29] The Tomara connection is also marked on the Mehrauli iron pillar, which has a short inscription referring to a king named Anangapala. Tomara rule made way for that of the Chauhans (also known as the Chahamanas) and the Lal Kot fortifications were enlarged to form Qila Rai Pithora. Remains of what is often referred to as the 'Rajput Period' have also been found at the Purana Qila, but these are not associated with the name of any specific king. Apart from these tangible remains, the Tomara connection with Delhi also surfaces in legends that link the naming of the city with a king of this dynasty.[30]

It is evident that settlements in the Delhi area go back to stone age times, and that many different settlements, urban and rural, emerged and flourished at different points in the historical period. However,—again with the possible exception of Indraprastha—we do not know what these settlements were known as. The earliest reference to a place name close to the name 'Dilli' (Delhi is its

anglicized form) belongs to the early medieval period—Anangapala Tomara's inscription on the Mehrauli iron pillar seems to refer to Dhilli or Dihali.[31]

A similar name occurs in three thirteenth and fourteenth century inscriptions, which, among other things, confirm the sequence of rulers over the area and also mention the name Hariyana or Hariyanaka.[32] A thirteenth century inscription found in a *baoli* (step well) in Palam village, not far from the airport, records the building of a step well by Uddhara, a householder of Dhilli. It states that the land of Hariyanaka was first enjoyed by the Tomaras, then by the Chauhans and then by the 'Shakas.' Shaka, in this case, is used for the early Delhi Sultans, as the inscription lists kings from Muhammad Ghor to Balban.[33] It also gives Yoginipura as another name for Dhilli. The thirteenth century Delhi Museum Stone inscription found at Sonepat near Delhi records the construction of a well in Suvarnaprastha village and tells us that Dhillika in the Hariyana country was ruled successively by the Tomaras, Chahamanas and Shakas. A fourteenth century inscription discovered in Sarban village near Raisina road records the building of a well by two merchants named Khetala and Paitala in Saravala village in the administrative division known as Indraprastha *pratigana*. The usual sequence of rulers is given, except that 'Shaka' is replaced by 'Turushka.' A fourteenth century inscription found at Naraina records the construction of a well by a person named Shridhara. It mentions Dhilli as situated in the great province of Hariyana, and locates Nadayana (i.e. Naraina) village to the west of Indraprastha. Apart from throwing light on the participation of wealthy people such as merchants in the construction of public works such as wells, these inscriptions contain some of the earliest references to names similar to Dilli and Haryana.

The Interface between the Ancient, Medieval and Modern

The Ashokan pillar that stands today in Firoz Shah Kotla was brought here from Topra in Haryana in the fourteenth century at the direction of Sultan Firuz Shah Tughluq. The one that stands opposite Bara Hindu Rao hospital on the northern ridge, not far from Delhi University, was brought here from Meerut at the orders of the same king. How and why these pillars were transported to Delhi make us reflect on an important fact—that ancient artefacts were often re-used and re-interpreted in radically different ways in later times.[34] The story of the Mehrauli iron pillar, which came to be connected with Anangapala Tomara and a legend about the naming of Delhi, is another reminder of the interesting medieval and modern histories of ancient remains.

The case study of the Ballabgarh tehsil by Nayanjot Lahiri and myself moves beyond what scholars think about the historical landscape towards how this

landscape is experienced and understood by the villagers who live in its midst.[35] It demonstrates how the hills and plains are geographical segments which are intimately connected with each other politically, socially, economically and culturally. We are used to viewing and admiring ancient artefacts as exhibits in museums, but they can occur in other settings as well, as part of the lived environment of communities. Villagers in the Ballabgarh area routinely assemble sculptural fragments found from time to time in their fields, in village shrines. Some of these fragments can be identified as being very old on stylistic grounds. This practice is known in other areas as well and goes back at least to the nineteenth century. It is yet another striking example of the re-use and reinterpretation of ancient artefacts in modern times.

The ancient history of the Delhi area is still very imperfectly understood and there is a great need for further exploration and study. Since Delhi is a living, growing city, ancient sites are being systematically destroyed by the combined impact of modernization, ignorance, indifference and neglect. Stone age sites in the Badarpur hills are fast disappearing due to quarrying while those on the southern ridge may soon be destroyed by the building of apartment complexes and shopping malls. Ancient mounds are being levelled to make houses, factories and roads or converted into agricultural fields. Some sort of compromise needs to be worked out between the pressing demands of modern lives and livelihoods and the need to preserve fast-vanishing relics of ancient times. An understanding of the early history of the Delhi area will hopefully make people aware of just how fragile and vulnerable its ancient remains are and also stimulate a concern for their documentation and conservation.

Notes and References

1. For a brief guide to Delhi's historical monuments, see Y.D. Sharma, *Delhi and its Neighbourhood* (N. Delhi, Archaeological Survey of India, 1990). This slim, informative, inexpensive book is ideal to carry around on an exploratory tour of the city. For a more thorough and detailed account of Delhi's medieval structures, see Zafar Hasan, *Monuments of Delhi: Lasting Splendour of the Great Mughals and Others,* 3 vols. (1916) edited by J.A. Page et. al.; 2 vols. reprint edition, N. Delhi, 1997, with an Introduction by R.C. Agrawal. For a more detailed account of monuments and structures of different ages in the city, consult *Delhi: The Built Heritage: A Listing*, 2 vols. (Delhi: Indian National Trust for Art and Cultural Heritage, Delhi Chapter, 1999).

2. Take the example of the octagonal red stone structure on the northern ridge, located on the side of the road descending from Bara Hindu Rao Hospital towards the old Subzi Mandi. This was built by the British in 1863 as a memorial to their officers and soldiers who were killed while fighting the rebels during the revolt of 1857. In 1972, on the twenty-fifth anniversary of Indian indepencence, this 'Mutiny Memorial' was converted

into a memorial for the rebels who had revolted *against* the British. This inversion of meaning was announced by an inscription near the base of the structure. As for the later imperial structures on and around Raisina hill, the Viceroy's house is now Rashtrapati Bhavan, the Secretariat is North and South Block, Kingsway is Rajpath, the Council House is Parliament House and the All India War Memorial Arch is India Gate.

3. See p. 210 for details of this legend.

4. A good way to get a 'feel' for ancient pottery and to identify the types of pottery associated with different cultures and periods is to visit the prehistory and protohistory sections of the National Museum. The Archaeological Survey of India has an excellent collection of ancient pottery from all over the country in its Purana Qila office.

5. See *The Delhi Ridge Forest: Decline and Conservation* (New Delhi, Kalpavriksha, 1992). For a detailed discussion of the flora of Delhi, see J.K. Maheshwari, *The Flora of Delhi* (New Delhi, Council of Scientific and Industrial Research, 1963). Also see Pradip Krishen, *Trees of Delhi: a field guide* (Delhi, etc., Delhi Tourism, Dorling Kindersley India, 2006), Introduction, pp. 19–38 for information accompanied by beautiful illustrations and useful maps.

6. The *Gazetteer of the Delhi District 1883–84* (reprint edn., Gurgaon, Vintage Books 1988) remains a good source of information on the streams. For Delhi's topography, geology, resources, flora and fauna, see the *Delhi Gazetteer* (Delhi Administration, 1976), pp. 1–26.

7. See pp. 3–5.

8. For a good discussion of this, see H.D. Sankalia, *Stone Age Tools: Their Techniques, Names and Probable Functions* (Poona, Decan {DECCAN} College, 1982).

9. See pp. 23–5.

10. See pp. 6–13.

11. For a good account and analysis of the various theories regarding the decline of the Harappan civilization, see Nayanjot Lahiri ed. *The Decline and Fall of the Indus Civilization* (N. Delhi, Permanent Black, 2000).

12. See pp. 29–35. The full excavation reports of these sites is likely to come out soon and will provide more detailed information.

13. See pp. 36–40.

14. See pp. 41–9.

15. For some of the many, divergent views, see pp. 77–115.

16. See pp. 53–61.

17. In order to understand the sequence and significance of the different archaeological phases at the Purana Qila, it is necessary to look at the cultural sequence at other sites in the upper Ganga valley and the doab, such as Hastinapur, Sonkh, Ahichchhatra, Atranjikhera and Sringaverapura.

18. See pp. 62–7.

19. See pp. 68–76.

20. See p. 73.

21. For other sites where Painted Grey Ware has been found, see B.R. Mani, pp. 193–8.

22. Nayanjot Lahiri, *The Archaeology of Indian Trade Routes Upto c. 200 BC: Resource Use, Resource Access and Lines of Communication* (N. Delhi, Oxford University Press, 1992), pp. 367–77. Lahiri has shown how archaeological evidence corroborates the literary references to the Uttarapatha. On the Uttarapatha, also see Moti Chandra, *Trade and Trade Routes in Ancient India* (N. Delhi, Abhinav Publications, 1977), pp. 12–22

23. See pp. 54–61, 119–20

24. See pp. 120–9.

25. It is not necessary for students to use diacritical marks, but they will need to have a general understanding of these while reading the text of the inscriptions. The conventions of transliteration followed in epigraphical writings also require explanation: A single hyphen indicates a *samasa* (compound word), a double hyphen *sandhi* (euphonic combination). Where both occur, a single hyphen is used. Text in ordinary brackets indicates corrections and doubtful points. Square brackets enclose damaged or partially illegible letters, or those which though illegible, can be supplied with certainty. Square brackets with letters or punctuation markes followed by an asterisk indicate letters or punctuation marks omitted in the original text.

26. For answers to these questions, see pp. 133–78.

27. See pp. 179–82.

28. M.C. Joshi ed. *King Chandra and the Meharauli Pillar* can be consulted for a detailed discussion of the contents of the inscription.

29. See pp. and pp. 185–92, 200–4

30. See pp. 210.

31. The reading of this inscription is not free from doubt. For instance, B.R. Mani (*Delhi: Threshold of the Orient*, N. Delhi, Aryan Books International, 1997, p. 47) does not see any reference to such a place in it.

32. See Pushpa Prasad, *Sanskrit Inscriptions of Delhi Sultanate 1191–1526* (Delhi, Oxford University Press, 1990), pp. 3–18, 22–31.

33. For an interesting discussion of this and other related issues, see Brajadulal Chattopadhaya, *Representing the Other? Sanskrit Sources and the Muslims (Eighth to Fourteenth Century)* (N. Delhi, Manohar, 1998).

34. See pp. 207–11. See the Introduction to the 2nd edition of my book *Ancient Delhi* (N. Delhi: Oxford University Press, 2006) for more details and for a discussion of the larger implications of the phenomenon of the reuse of ancient artefacts and monuments.

35. See pp. 212–24.

PART I

Stone Age Sites in the Delhi Area

River Migration and the Floods: A Study of a Section of Yamuna River through Remote Sensing

A.K. Grover and P.L. Bakliwal

Introduction

The oscillatory nature of river Yamuna in the Indo-Gangetic alluvial plains of Uttar Pradesh and Haryana as soon as it descends from the Himalayas, is well imprinted on the Landsat imagery in the form of numerous palaeochannels and associated features. The migration of this river has briefly been mentioned by Singh (1952), Suraj Bhan (1970), and Yaspal et al. (1980), and a section of this river from Delhi to Agra was studied by Bakliwal and Sharma (1980). In this note an attempt has been made to describe the migratory history of Yamuna river from its inception in the plains up to its meeting with the Chambal river east of Etawah and its role in the floods occurring in Sahibi and Banganga river.

Palaeochannels

The area between Paonta Sahib (30°27'' : 77°37'') and Etawah has been visually studied on the Landsat MSS imagery on paper prints and transparencies of 1:1 million scale. The study reveals a swarm of cut off meanders, ox-bow lakes and levees as a part of palaeochannel system in the alluvial plains of Uttar Pradesh, Haryana and Rajasthan. The palaeochannels are of different geometry, width and orientation and show fluctuating migratory distances of the river from its present course. These palaeochannels are seen as gentle depressions of high moisture, thickly cultivated and at places with raised levees where settlements are mostly located.

Migration

The river which is supposed to have come into existence as an eastward flowing Yamuna, after abandoning the Saraswati River system, around 1800 BC as

Excerpted from *Man and Environment*, 9 (1985), pp. 151,153.

indicated by archaeological findings (Suraj Bhan, op. cit.) has continued to flow eastward with rapid migration. The earliest palaeochannel which could be reconstructed flowed through Karnal, Safidon and Bhiwani in NE-SW direction before swinging eastwards via Jhajjar and Gurgaon up to Delhi. From Delhi onwards, the river flowed southward, the earliest traces of which have been noticed near Faridabad, Nuh, Hodal and Bharatpur. About six successive stages of Yamuna river have been reconstructed indicative of its migratory pattern in the alluvial plains of Haryana where these are best depicted in the Landsat imagery. Numerous discontinuous meander channels have been observed in Rajasthan.

It is seen that the river migration varied from 100 km in the area north and west of Delhi to 40 km in the area south of Delhi. The Yamuna seems to have remained more or less static around in a span of 4000 years. It is significant that practically no surface drainage system exists in these plains. The high porosity and permeability of the sediments in these palaeochannels linked through internal drainage network, are responsible for draining the region which in turn may act as potential aquifers for ground water.

Floods In Sahibi And Banganga Rivers

Rivers Sahibi and Banganga which get lost in the plains, flood the area round Farrukhnagar and Bharatpur respectively, causing great problems for the inhabitants and loss of crop etc. It may be seen that the earliest courses of the Yamuna show an apparent link with the dying traces of the Sahibi and the Banganga rivers, indicative of their being once the tributaries of Yamuna river. The sudden and the faster migration of the perennial Yamuna resulted in the profile inequilibrium with its seasonal tributaries namely Sahibi and Banganga. These tributaries could not cope up with the pace of the main river migration and thus were forced to abandon their waters in the older flood plains of the Yamuna inundating a vast area around Farrukhnagar and Bharatpur respectively. This accelerated migration of the Yamuna causing imbalance with its tributaries seems to be the main reason for the occurrence of floods in Sahibi and Banganga rivers. The magnitude of floods gets accentuated due to the flat nature of older flood plains on which these rivers spread their water loads after losing their identity.

Conclusion

The Yamuna river once flowed 100 km west of Delhi via, Karnal, Bhiwani, Jhajjar and Gurgaon when Sahibi, Kasaunti, Dohan, Barah and Banganga were its tributaries. The fast eastward migration of the Yamuna did not give enough

time/passages to these tributaries to move along with it and thus, resulted in the latter losing their courses and dumping their waters in the rainy season in the zone of migration of the Yamuna river, causing floods in Bharatpur and Farukhnagar areas. It is, therefore, suggested that drains along the palaeochannel courses of the Yamuna, providing a appropriate slope geometry, may be constructed to carry excess water of Sahibi and Banganga rivers in the rainy seasons upto the present course of the Yamuna. In the drier periods, these palaeochannels being potential aquifers for ground water could be gainfully tapped.

References

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A Preliminary Report on the Stone Age of the Union Territory of Delhi and Haryana

Dilip K. Chakrabarti and Nayanjot Lahiri

The Study Area

The Aravallis, although subject to much levelling in recent years, are spread like broken waves over Delhi, dipping down to the Yamuna at the Waziribad crossing. In the southern periphery of the city the hills are higher and more rugged in relief. As one proceeds to Suraj Kund in the neighbouring Haryana, past the stone-grinding machines and the dust-laden air of Badarpur, one finds the distribution of the ranges more compact and continuous for at least several kilometres to the south. This hill massif presents a sharp and high southern edge to the plain along the modern Faridabad-Sona road roughly between the Badkhal Lake and the Sona-Paliwal road crossing. Along the Mehrauli-Gurgaon road the topography, particularly to the south of the road, is rocky and broken in patches, and for the sharper contour of the hills one has to go past the Chhatarpur village and the farm-houses of the rich to the Bhatti mines. The patches of broken topography in this sector continue intermittently up to the area of the modern 'bypass' to Gurgaon.

From the Delhi belt the Aravallis strike out in two directions, both in conformity with the overall northeast-southwest alignment of the Aravalli system. One strike is towards Alwar, with the hills coming close to the modern road near Sona. Beyond Sona one can climb atop a tableland (the entrance to which is protected by a mediaeval fortification) which continues—always with the hills in horizon—to the vicinity of Tauru. The hills feature sharply between Tauru and Nuh in a section called the Bandhwa Ghati. They also occur in a stretch between Tauru and Manesar on the Delhi-Jaipur road. The second Aravalli strike from Delhi is towards Jaipur. Much of this route traverses the Sahibi valley but the hills are always close by. Of these two routes to Rajasthan the Alwar route with the Asokan edicts of Srinivaspuri (Delhi) and Rupnath (Bairat) on the way was obviously more important in the historical period.

Excerpted from *Man & Environment*, 11 (1987), pp. 109–12.

Beyond the urban belt of Delhi the Aravallis constitute a world of comparatively low and rugged hills which are covered mostly by reddish rocks and scrub jungle and contrast sharply with the verdure of the Stone Age sequence to a specific stratigraphic situation. One can in all honesty claim that the present work with its discovery of 43 sites in a wide region and the stratigraphic sequence of this Stone Age material has laid the foundations of the Stone Age studies in the Union Territory of Delhi and the state of Haryana.

The Inventory of Sites and Artifacts

1. *The area between the Kalkaji Temple and the Asokan inscription* (AI): a casual search in this area revealed only one microlithic point in crystal quartz but one can be reasonably sure that a prolonged and careful search will result in the discovery of more microliths in the area. Even our lone find is interesting because of the light it seems to throw on the background of the myth of the Sakti cult-spot of the Kalkaji Temple and on the general cultural setting of the Asokan inscription.
2. *Lakkarpur* (LKP): the road to Suraj Kund from Delhi branches off at this point (which is slightly beyond Badarpur towards Suraj Kund) for Faridabad—about 2m thick soil deposit exposed in various places of this area—a microlithic flake occurred *in situ* in this soil. Microliths: parallelsided blades—6, flakes—3, cores—5, burin—1, point—1, scraper—1. Except a flake which is on a greyish chert: all the specimens are in milky to crystal quartz.
3. *S.O.S. Children's Village* (SOS): the site is to the west of the village which is little south of the Suraj Kund–Faridabad road—the top of the ridge is considerably disturbed, but the tools apparently came out of the conglomerate exposed here on the surface. Lower Palaeolithic: handaxes—3, scrapers—7. Middle Palaeolithic: points—2, round scraper—1, scraper—1, scraper-cum-borer—1. Upper Palaeolithic: retouched flake—1, retouched blades—2. The material is invariably a brownish fine-grained quartzite.
4. *Anangapur Hills* (ANG): the road from Suraj Kund to Faridabad passes by the modern Police Post of the village of Anangapur, but the village itself—or at least the major part of it is more than a kilometre to the south and encircled by a rim of hills pierced only by the road coming from the Police Post side—implements are found sporadically on the surface of the hills but the surface is disturbed because of quarrying. Lower Palaeolithic: flakes—2, scrapers—10, discoid core—1, cleaver—1.
5. *Ankir Pahari* (ANK): the road from Faridabad to Suraj Kund climbs an extensive low ridge soon after the bifurcation of the road to Badkhal lake—

the site is near the beginning of this ridge from the Faridabad side—implements on the disturbed surface. Lower Palaeolithic: discoid core—1 (in brownish quartzite). Microliths: burin—1, point-cum-scraper—1 (both in milky quartz).

6. *Meola Pahari* (MLP) I: the site is about a kilometre south of the Suraj Kund—Faridabad road, between the Anangapur Police Post and Ankir Pahari—Lower Palaeolithic: handaxes—4, scrapers—3, cleavers—5. Middle Palaeolithic: side scraper—1, nose scraper—1, borer-cum-side scraper—1. The material is invariably brownish including the Middle Palaeolithic specimens.
7. *Meola Pahari* II: more than 2 km to the south of MLP I—a large natural exposure at the spot showing from the top a thick (1–1.5 m) deposit of soil and a thinner (.5–.75 m) deposit of conglomerate/breccia underlain by bedrock. The lower palaeolithic implements occurred in the conglomerate. Lower Palaeolithic: flakes—2, discoid core—1, core—1, cleavers—3, (one on flake), side scraper—1, keel scraper—1, handaxe—1. Material—brownish quartzite.
8. *Meola Pahari* III: about 1 km to the northwest of MLP II. Lower Palaeolithic: handaxes—2, discoid core—1, scrapers—5. Middle Palaeolithic: cleaver—1 (on flake, edge retouched), scrapers—6, scraper-cum-borer—1. Microliths: borer—1, blade—1. Except the microlithic borer in crystal quartz, the other specimens are in brownish quartzite.
9. *Bhaunkri* I (BNK): the site is to the north of the road to Sohna from the Badkhal lake area—Lower Palaeolithic (in quartzite): scrapers—3, handaxe—1, cleaver—1. Upper Palaeolithic (in crystal quartz): blade core—1, points—4, burin—1, notch—2, retouched cores—6, retouched flakes—16, borer-cum-scraper—1, thumbnail scraper—1, scraper (with a tang)—1.
10. *Bhaunkri* II: about a kilometre to the west of Bhaunkri I. Lower Palaeolithic (in quartzite): handaxes—2, retouched flake—1, side-scraper—1.
11. *Noadah Koh* (NDK) I: the site is to the north of the Badkhal lake-Sohna road, near the village of Noadah Koh. Lower Palaeolithic (in quartzite): cleaver—1, flake—1.
12. *Noadah Koh* II: the site is about 1 km to the south of the Badkhal lake—Sohna road. Lower Palaeolithic (quartzite): handaxes 2, scraper—1. Middle Palaeolithic: point-cum-borer—1, scrapers—8 (one in crystal quartz), points—5 (4 in milky quartz), nose scraper (milky quartz)—1. Upper Palaeolithic: blade core—1, blade and blade fragments—15 (11 in crystal or milky quartz), scraper—1. Microlithic: scraper—1, cores—9, lunate—1, p.s. blade—1 (all in crystal quartz). Unless otherwise stated, all specimens are of brownish quartzite.
13. *Paligaon Hills* (PGH): the site is roughly to the north of the Paligaon

village which seems to be an important quarrying centre. Lower Palaeolithic: handaxes—4, retouched flake—1. Middle Palaeolithic: scrapers—7. Microliths: core—1, side scrapers—2, end scraper—1, borer—1. All microliths and a few Middle Palaeoliths are in milky to crystal quartz.

14. *Mohtabad Hills* (MTB): the site is further west along the bills—Upper Palaeolithic: blade cores—2, burin-on-core—1, scrapers—3. Microlithic: points—7, cores—2, flakes—2. Except a single piece of microlithic flake which is in quartzite, all these specimens are in crystal quartz.
15. *Gothra* (GTH): 1.5 km west of MTB—Lower Palaeolithic: scraper—1. handaxe—1. Upper Palaeolithic: blades—5, notch—1. Microlithic: retouched flakes—5.
16. *Dhauj* (DHJ): 4 km to the west of Gothra. Lower Palaeolithic: handaxe—1, scrapers—4, Microlithic: scraper—1.
17. *Shehi* (SHI): 2.5 km west of Dhauj. Lower Palaeolithic: scraper—1, discoids—3. Upper Palaeolithic: blade core—1, blade fragment—1, scrapers—2 (all in crystal quartz). Microliths: 25 cores/flakes (crystal quartz).
18. *Khari Jamalpur* (KHJ): 2 km west of Sirohi. Lower Palaeolithic: handaxe—1 (lanceolate), scrapers—2. Middle Palaeolithic: borer—1 (crystal quartz). Upper Palaeolithic: knife—1, blade—1 (crystal quartz). Microlithic: core—1 (crystal quartz).
19. *Tethur* (TTH): 2 km west of Khori Jamalpur. Upper Palaeolithic: blade cores—2 Microlithic: scraper—1, core—1.
20. *Kherli* (KRL): 1.5 km west of Kherli. Lower Palaeolithic: scrapers—3, scraper-cum-borer—1 (milky quartz).
21. *Nimour* (NMR): 2.5 km west of Kherli. Lower Palaeolithic: scraper—1, Middle Palaeolithic: scrapers—3. Upper Palaeolithic: blade core—1. Microlithic: point—1, burins—3, scrappers—3, P.S. blades—2. flake—1. All specimens except the LP one are in milky quartz.
22. *Ladho Sarai* (LDH): on the Mehrauli–Gurgaon road, close to Qutab Upper Palaeolithic: blade core—1, cores—2, points—8. Microlithic: borer—1, scraper—1, ps. blades—2.
23. *Chhattarpur* (CHT): Mehrauli-Gurgaon stretch—Lower Palaeolithic: handaxe—1, scrapers—2. Upper Palaeolithic: blade fragment—1, points—2, scraper—1. Microlithic: core—1, point—1, flakes—3.
24. *Harchandpur* (HCD): on the way to the Bhatti mines from Chhattarpur—Lower Palaeolithic: scrapers—2, handaxe—1. Middle Palaeolithic: borers—2, points—2. Microlithic: retouched flakes—6, point—1. All except LP specimens are in crystal quartz.
25. *Sikandarpur* (SKN): Mehrauli-Gurgaon stretch—L.P.: cleaver—1, scraper—1. Upper Palaeolithic: points—6, scraper—1, blade fragments—

2, borer—1. Microlithic: flakes—4. All except LP specimens are in crystal quartz.

26. *Nimriwali Pahari* (NMP): western edge of the hills towards Sohna on the Badkhal lake Sohna road—LP: handaxe—1. MP: retouched cores—2, core—1. UP: knife—1, end scraper on blade—1. Microlithic: scrapers—4.
27. *The JNU Hills* (JNU): not far from the main gate of this university campus there is a small market to the western side of the university road. The land outside the university complex slopes away at this point, first to a school and then to a large expanse of undulating rocky land full of scrub jungle and dissected partly by a deep ravine holding rainwater in places. The tools were found around a suitable rocky outcrop in this area. Lower Palaeolithic: handaxes—4, discoid core—1, cleaver—1, scrapers—4. Middle Palaeolithic borers—4, scrapers—4. Upper Palaeolithic: borers—2, keel scrapers—1.
28. *Bhondsi* (BHD): on the Gurgaon–Sohna road, to the right. Middle Palaeolithic: scrapers—3 (all in crystal quartz).
29. *Nangri-ki-Dhari* (NGD): on the Gurgaon–Sohna road, immediately before Sohna, to the right—Lower Palaeolithic: scraper—1. Microlithic (all in crystal quartz) cores—2, scrapers—5, points—3, blades—2.
30. *Bandhawa Ghati I* (BNG I): the road from Nuh to Tauru crosses a hill range called Bandhwa Ghati. BNG I is in the first stage of this passage on the Nuh side. Lower Palaeolithic: handaxe—1, scraper—1. Middle Palaeolithic: scraper—1, borer (crystal quartz)—1. Microlithic: flakes/crores—5.
31. *Bandhwa Ghati II* (BNG II): immediately before the above mentioned passage gets down to the plain on the Tauru side—Lower Palaeolithic: handaxes—4, scrapers—4. Middle Palaeolithic: scraper-cum-borer—1. Microlithic: flake—1.
32. *Dhulawat* (DWT): on the Tauru-Sohna road, to the left—Lower Palaeolithic: handaxes—2, scrapers-1 (one in crystal quartz), cleavers—3. Microlithic: points—2, scraper—1, burin—1.
33. *Bhutla* (BTL): on the Tauru-Sohna road—to the left. Lower Palaeolithic: discoid—1, scraper—1, handaxes—2. Middle Palaeolithic: hollow scraper—1. Upper Palaeolithic: blade core—1. Microlithic: scrapers—2 (in crystal quartz).
34. *Bypass to Gurgaon* (BTG): soon after the beginning of the bypass from the Gurgaon side—to the right. Lower Palaeolithic: handaxe—1. Middle Palaeolithic: double-sided-cum-end scraper—1, handaxe—1 (crystal quartz), scrapers—2, core—1.
35. *Manesar* I (MNS I): on the Delhi—Jaipur road—microliths, all in crystal quartz, embedded in the top soil. Point—1, scraper—2, retouched core—1.

Figure 1:

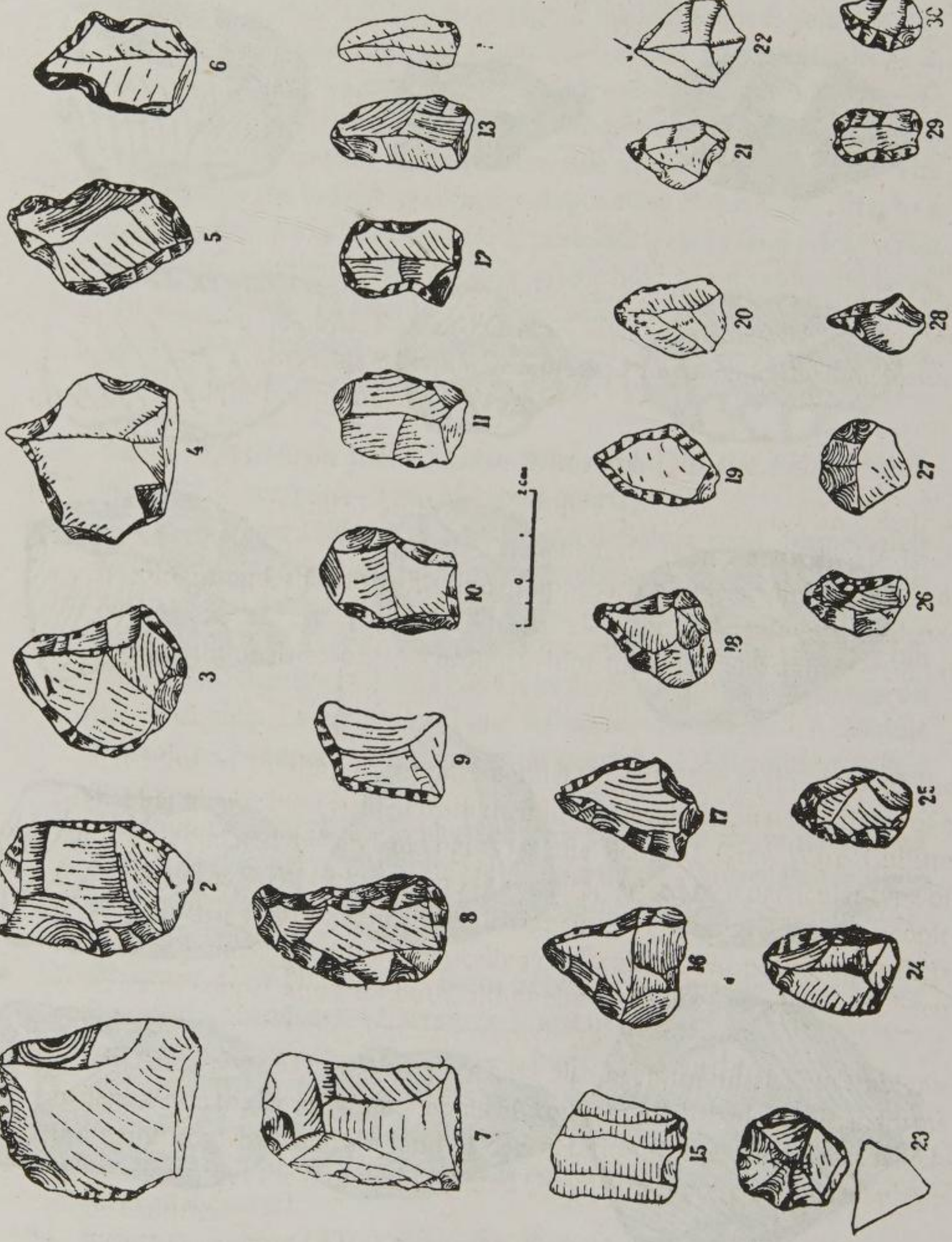
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Figure 2:

Figure 1

1. *Bhaunkri II—handaxe—180 by 140 by 52 mm—fine-grained quartzite.*
2. *JNU Hills—handaxe—140 by 90 by 40 mm—fine-grained greyish quartzite.*
3. *SOS Children's Village—handaxe—130 by 70 by 29 mm—quartzite.*
4. *Meola Pahari I—handaxe—119 by 74 by 27 mm—quartzite.*
5. *JNU hills—handaxe—139 by 76 by 34 mm—quartzite.*
6. *Bhaunkri II—sidescraper—110 by 112 by 38 mm—quartzite.*
7. *Delhi University South Campus—round scraper—87 by 75 by 30 mm—quartzite.*
8. *Bhaunkri II handaxe—104 by 71 by 38 mm—quartzite.*
9. *Meola Pahari I—handaxe—99 by 57 by 28 mm—quartzite.*
10. *Anangapur—cleaver—155 by 83 by 42 mm—quartzite.*
11. *Meola Pahari I—cleaver—160 by 91 by 42 mm—quartzite.*
12. *Meola Pahari I—cleaver—128 by 96 by 38 mm—quartzite.*

Figure 2

1. *Noadah Koh II—sidescraper—91 by 79 by 24 mm—quartzite.*
2. *JNU Hills—sidescraper—89 by 62 by 32 mm—quartzite.*
3. *Noadah Koh II—sidescraper—75 by 59 by 22 mm—quartzite.*
4. *JNU Hills—borer—75 by 73 by 38 mm—quartzite.*
5. *Paligaon Hills—sidescraper—79 by 48 by 21 mm—quartzite.*
6. *JNU Hills—knife—70 mm by 39 by 14 mm—quartzite.*
7. *SOS Children's Village—blade—92 by 46 by 15 mm—quartzite.*
8. *Nimriwali Pahari—knife—82 by 42 by 22 mm—milky quartz.*
9. *Noadah Koh II—knife—56 by 38 by 25 mm—milky quartz.*
10. *Noadah Koh II—blade—64 by 36 by 17 mm—milky quartz.*
11. *JNU Hills—retouched blade—56 by 34 by 12 mm—fine grained greyish stone.*
12. *Meola Pahari II—blade—59 by 29 by 15 mm—quartz.*
13. *Harchandpur—blade—60 by 28 by 12 mm—quartz.*
14. *Noadah Koh II—blade—49 by 15 by 6 mm—fine-grained quartzite.*
15. *Noadah Koh II—blade core—55 by 45 by 30 mm—whitish stone.*
16. *Bhaunkri I—point—63 by 52 by 15 mm—milky quartz.*
17. *Noadah Koh II—point—64 by 39 by 11 mm—milky quartz.*
18. *Bhaunkri I—point —53 by 38 by 23 mm—quartz.*
19. *Harchandpur—point—52 by 30 by 10 mm—milky quartz.*
20. *Bhaunkri I—point—47 by 32 by 8 mm—milky quartz.*
21. *Bhaunkri I—point—42 by 28 by 10 mm—milky quartz.*
22. *Bhaunkri I—burin—45 by 31 by 36 mm—quartz.*
23. *JNU Hills—thumbnail scraper—45 by 31 by 36 mm—quartz.*
24. *Bhaunkri I—olade—58 by 35 by 17 mm—milky quartz.*
25. *Bhaunkri I—point—52 by 34 by 12 mm—milky quartz.*
26. *Bhaunkri I—notch scraper—44 by 25 12 mm—milky quartz.*
27. *Bhaunkri I—end scraper—38 by 39 by 16 mm—quartz.*
28. *Bhaunkri I—borer—40 by 23 by 12 mm—quartz.*
29. *Noadah Koh II—sidescraper—36 by 22 by 10 mm—quartz.*
30. *Noadah Koh II sidescraper—30 by 25 by 11 mm—quartz.*

Prehistoric Delhi and its Neighbourhood: Physical Features

A.K. Sharma

Geology

The Aravallis

THE ARCHAEAN SEDIMENTS WERE UPLIFTED MARKING PERHAPS THE FIRST OROGENIC movement, recognisable in earth's geologic history and giving birth to the Aravallis. 'Evidence exists that this mountain-chain received renewed upheavals during the early Palaeozoic and was of far greater proportions in past times, and that it stretched from the Deccan to perhaps beyond the limits of the Himalayas.' (Singh 1971).

The Aravalli[1] mountains are one of the important parts of the mountain ranges of the Peninsula. They are the only instance of a tectonic mountain chain. They were a prominent feature in the old Palaeozoic and Mesozoic Geography of India, and extended as a continuous chain of lofty mountains from the Deccan to possibly beyond Garhwal. What we see of them at present, are but the deeply eroded remnants of these mountains, their mere stumps laid bare by repeated cycles of erosion. The most ancient mountain-chain of India came into existence at the close of the Dharwar era, when the sediments that were deposited in the seas of that age were ridged up by an upheaval of an organic nature. Since then the Aravalli mountains remained the principal feature in the geography of India, for many ages, performing all the functions of a great mountain-chain and contributing their sediments to many deposits of later ages. It is the area of one of the oldest geo-synclines of the world. The lower Aravalli system is composed of basal quartzites, conglomerates, shales, slates, phyllites and composite gneisses. It rests with a great erosional unconformity on the finely schistose and banded gneiss.

Structurally the Aravallis represent a synclinorium, filled with rocks of the Aravalli and Delhi system and bear the marks of intrusions of basal gneisses

Excerpted from A.K. Sharma, *Prehistoric Delhi and its Neighbourhood*, Aryan Books International, New Delhi 1993, pp. 8–19, 21, 45–6.

and granites, definitely older than the two. The Aravallis have undergone intense metamorphism. The system is largely composed of argillaceous deposits, metamorphosed from shales through slates and phyllites to mica schists.

The Aravalli range running across the region like a curved Scimitar from south-west to north-east is the principal and the dominant land form of the region. This range though not of uniform width extends for about 692 kms. from Palanpur in Gujarat to Delhi. The loftiest and most clearly defined section of the Aravalli range is in the Mewar and Merwara hills where it forms an unbroken range. Beyond Ajmer it breaks up into straggling and discontinuous hills. The successive hills and rocky eminences stretch north-eastwards west of Sambhar Lake through the districts of Jaipur, Sikar and Alwar up to Khetri where it almost terminates through detached hills which can be seen as far as Delhi.

Delhi System

The Raialo series comes above the Aravallis with a pronounced unconfirmity. The Raialos are succeeded in the northern part of the Aravallis, after another great unconformity, by the system of quartzites, grits and schistose rocks constituting the famous ridge of the city of Delhi. The system is intruded by a varied series of basic rocks and by a series of granite bosses and laccolites, with their related groups of pegmalites and aplites, covering a large area to the west of Aravalli ranges. The Delhi system, which may be taken as marking the commencement of the Purana era is characterised by a great variety and abundance of igneous intrusions and by an intense grade of metamorphism than that observed in the older Aravallis (Archaeans). Proofs of glacial conditions exist in Aravallis in the form of boulder beds. In the north, the Aravallis were the chief gathering grounds for the snow-fields from which the glaciers radiated out in all directions.

The Aravallis[2] are thought to constitute one of the finest examples of a true tectonic range. They form the major watershed of Northern India, separating the drainage of the Ganga river system from that of the Indus.

The more consistent and continuous structural characteristics throughout the Aravallis are the quartzite formations which because of their superior resistance to denudation have remained in the form of flattened ramparts.

The rocks of Delhi belong to the earliest and latest chapters of the geological history of the earth, the pre-Cambrian and the Quaternary. The intervening records are missing, as the region has been lying exposed to sub-aerial erosion since it rose from beneath the sea in late pre-Cambrian times (1500 million years ago). Its rebirth took place towards the end of pre-Cambrian period about 800 million years ago. During the Permo-Carboniferous period 250 million years ago, when India, Malagasy, South Africa, South America, Australia and Antarctica

were united forming Gondwanaland, the Aravallis range was the backbone of the north-eastern angle of the great continent. It was rejuvenated in Pleistocene times more than a million years ago. The Tughlakabad quartzite table land attains a height of about 243 m. above mean sea level and 30 m. above the surface of the plain. The hills, ridges and plateaus are unconformably overlain and surrounded by the alluvium and wind blown sands of the Quaternary period.

River Courses

The great Indian water-divide (the Aravallis) separates the Arabian Sea system including the western Rajasthan drainage system from the Bay system (the Ganga system) through the Yamuna which is fed by the Chambal, the Banganga, the Kunwari and the Sindh, etc. Probably the Chambal system is older than the Yamuna which formerly belonged to the Indus system in the Tertiary and Holocene periods. Due to subsidence in the Ganga delta and the later uplift in the Aravalli-Delhi axis, the Yamuna changed its course, became a tributary of the Ganga and usurped the catchment areas of the Chambal and other streams of the central Foreland. The river which is supposed to have come into existence as an eastward flowing Yamuna, after abandoning the Saraswati River system, around 1800 BC as indicated by archaeological findings (Suraj Bhan, op. cit.) has continued to flow eastward with rapid migration.

Little is known about the details of the geological history of the Sirmur region where the Saraswati and the Ghaggar rise. In view of the fact that the Himalayan region has been experiencing uplift in the Pleistocene and perhaps even after man had appeared, it would be interesting to know whether the Saraswati originally derived its waters from the Himalayas beyond the Siwalik zone and whether the old drainage was cut off by the subsequent rise of the Siwalik hills and by other changes.

There is some reason to believe that the Yamuna might possibly have flowed to the south and south-west into Rajasthan or, at any rate, shared its waters with the Saraswati which was undoubtedly a large river during the Vedic times. The courses of many of the rivers of the plains have undergone great alterations. Many of these rivers are yearly bringing enormous loads of silt from the mountains, and depositing it on their beds, to raise them to the level of the surrounding flat country, through which the streams flow in ever shifting channels. A comparatively trifling circumstance is able to divert a river into a newly scoured bed. The river Yamuna, the sacred Saraswati of the Hindu *shastras* in Vedic times flowed to the sea through the Eastern Punjab and Rajputana, by a channel that is now occupied by an insignificant stream which loses itself in the sands of the Bikaner desert. In course of time the Saraswati took a more

and more easterly course and ultimately merged into the Ganga at Prayag. It then received the name of Yamuna.[3]

Most of the great Punjab rivers have frequently shifted their channels. In the time of Akbar, the Chenab and Jhelum joined the Indus at Uch, instead of at Mithankot, 60 miles downstream, as at present. Multan was then situated on the Ravi; now it is 36 miles from the confluence of that river with the Chenab. 175 years ago Beas deserted its old bed, which can still be recognised between Montgomery and Multan, and joined up with the Sutlej near Firozepur several hundred miles upstream.[4]

The records of the 3rd century BC show that the Indus flowed more than 80 miles to the east of its present course, through the now practically dry bed of a deserted channel, to the Rann of Kutch, which was then a gulf of the Arabian Sea. The westering of the Indus is thus a very pronounced phenomenon, for which different causes have been suggested. An old river bed, the channel of a lost river, is traceable from Ambala, near the foot of the Himalayas through Bhatinda, Bikaner and Bahawalpur to Sind.[5] It is probably the old bed of the Saraswati (the Yamuna when it was an affluent of the Indus) at a time when it and the Sutlej flowed independently of the Indus to the sea, i.e. the Rann of Kutch. The present day river bed to the east of Sind, known as the Eastern Nara, is either the old bed of the Indus or, more probably the channel of the Sind portion of the Sutlej after the river deserted it.

Great changes have likewise taken place in Bengal and in the Gangetic delta since 1750; and hundreds of square miles of the delta have become habitable since then. In 1785 Rennel, the great Geographer of Bengal, observed the Brahmaputra flowing through Mymensingh; now it flows 40 miles westwards. Moreover, the Tista flowed southwards through Dinajpur and joined the Ganga; now it has a south-easterly course and discharges into the Brahmaputra.[6]

Old maps of Bengal show that hardly 150 years ago, the river Brahmaputra, which now flows to the west of Dacca, and off the elevated piece of ground to its north, known as the Madhupur jungle, then flowed a great many miles to the east of these localities. This change appears to have been accomplished suddenly in the course of a few years.

Latest reports[7] by scientists at the Remote Sensing and Geo-Engineering Centre at Aligarh claim that the original confluence of the Ganga and the Yamuna was in Delhi and the *sangam* at the Allahabad was, in geological terms a 'recent phenomenon'. With the help of computer-aided visuals and digital data collected through satellites, researchers have been able to trace the course of the Ganga during the Pleistocene period. According to Dr Iqbaluddin, Director of the Centre, the Ganga changed its course around 10,000 BC. The neo-tectonics in the region led to the changes in the river's course.

Yamuna-Palaeochannels (Fig.1)

The oscillatory nature of river Yamuna in the Indo-Gangetic alluvial plains of Uttar Pradesh and Haryana is well imprinted on the Landsat imagery in the form of numerous palaeochannels and associated features. A section of this river from Delhi to Agra was studied by Bakliwal and Sharma (1980). The study reveals a swarm of cut off meanders, ox-bow lakes and levers as a part of palaeochannel system in the alluvial plains of Uttar Pradesh, Haryana and Rajasthan. The palaeochannels are of different geometry, width and orientation and show fluctuating migratory distances of the river from its present course. These palaeochannels are seen as gentle depressions of high moisture thickly cultivated and at places with raised levels where settlements are mostly located.

The earliest palaeochannel flowed through Karnal, Safidon and Bhiwani in the north-east—south-west direction before swinging eastwards via Jhajjar and Gurgaon up to Delhi. From Delhi onwards, the river flowed southwards, the earliest traces of which have been noticed near Faridabad, Nuh, Hodal and Bharatpur. About six successive stages of Yamuna river have been reconstructed (Fig. 1), indicative of its migratory pattern in the alluvial plains of Haryana where these are best depicted in the Landsat imagery (Grover and Bakliwal 1985). Numerous discontinuous meander channels have been observed in Rajasthan.

It is seen that the river migration varied from 100 kms. in the area north and west of Delhi to 40 kms. in the area south of Delhi. The Yamuna seems to have remained more or less static around Delhi over a span of 4000 years. The high porosity and permeability of the sediments in these palaeochannels linked through internal drainage network, are responsible for draining the region. These palaeochannels being potential acquifers could be gainfully tapped for ground water.

The earliest courses of the Yamuna show an apparent link with dying traces of the Sahibi and the Banganga rivers, indicative of their being once the tributaries of Yamuna. The sudden and faster migration of the perennial Yamuna, resulted in the profile inequilibrium with its seasonal tributaries namely Sahibi and Banganga. These tributaries could not cope up with the pace of that main river migration and thus were forced to abandon their waters in the older flood plain of the Yamuna inundating a vast area. The magnitude of floods gets accentuated due to the flat nature of older flood plains on which these rivers spread their water loads after losing their identity.

The presence of deep gorges in the earlier courses of the Yamuna river and its meandering pattern indicates that perhaps there was high intake of water and very rapid flow as the river entered the Aravallis. The large quantity of water may be due to heavy rainfall in the upper reaches of the river.

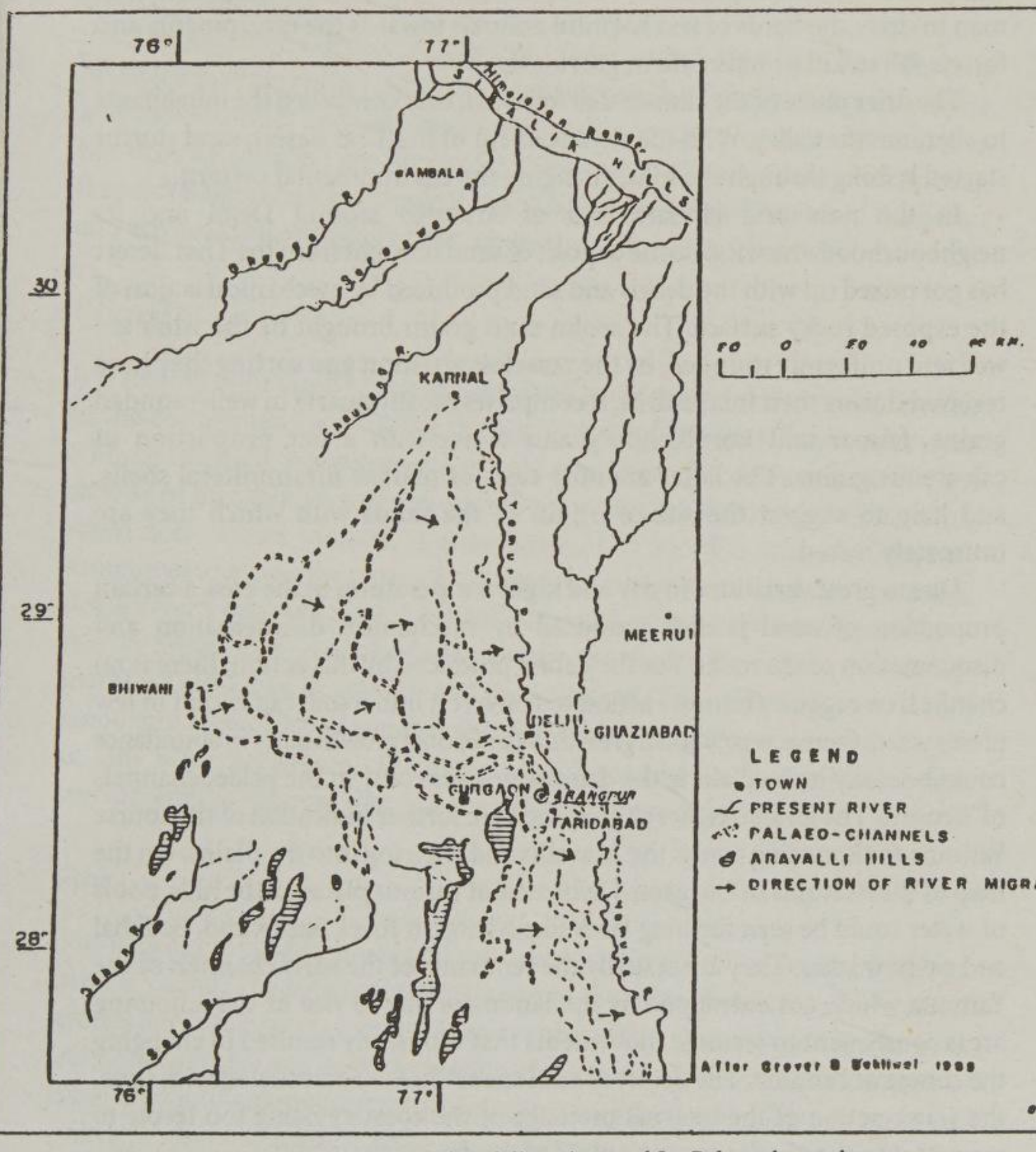

Figure 1: Yamuna River Migration and Its Palaeochannels

The hill top where open outcrops of quartzite rocks were in plenty provided the necessary raw material for the palaeolithic settlers of the Yamuna basin. As the area has abundance of game, sheltered in deep forests, escarpments along the course of the palaeochannels provided ideal spots for the palaeolithic man to drive the herds of less harmful animals towards the escarpments and force a fall to kill or injure them greviously.

The drier phase of the climate that followed, later compelled the inhabitants to abandon the valley. With the advancement of the Thar desert, sand storms started lashing through the hills, changing the environmental pattern.

In the now arid climate area of Aravallis around Delhi and its neighbourhood, the wind borne deposit of sand brought from the Thar desert has got mixed up with the debris and sand produced by mechanical action of the exposed rocky surface. The aeolin sand grains brought by the wind are well and uniformly rounded, by the ceaseless attrition and sorting they have received during their inland drift. It comprises mostly quartz in well-rounded grains, felspar and hornblende grains along with a fair proportion of calcareous grains. The latter are only casts of marine foraminiferal shells, and help to suggest the site of origin of the sands with which they are intimately mixed.

Due to great variations in day and night temperatures in the area, a certain proportion of sand is also produced by mechanical disintegration and disquamation of the rocks. For the debris produced by this action, there is no chemical or organic (humus) action to convert it into a soil-cap except in few places where there is vegetational growth. Vegetational growth fairly in abundance could be easily located along the depressions generally in the palaeochannels of Yamuna. The long stretches of green belt are further indication of the course Yamuna took, cutting across the Aravallis and entering into the plains. On the map of the Aravallis in Gurgaon-Delhi area, at various places in the hills, pools of water could be seen forming lakes like Nijafgarh Jheel, Surajkund, Badkhal and ox-bow lakes. They are actually the remnants of the early channels of the Yamuna which got entrapped by the landmass due to rise of the adjoining areas consequent to tectonic movements that ultimately resulted in changing the course of Yamuna. The desert conditions are hence accentuated with time, the water-action of the internal drainage of the country being too feeble to transport to the sea the growing mass of sands.

There is a tradition, supported by some physical evidence, that the basin of the Indus was not always separated from the Peninsula by the long stretch of sandy waste as at present. 'Over a vast space of the now desert country, east of the Indus, traces of ancient river-beds testify to the gradual dessication of the once fertile region; and throughout the deltaic flats of the Indus may still be seen old channels which once conducted its waters to the Rann of Kutch;

giving life and prosperity to the port cities of the delta, which have left no living records of the countless generations that once inhabited them.'[8]

A more subtle and less easily understood phenomenon of the Rajputana desert is the growing salinity of its lake-basins by the wind-borne salt dust from the sea-coasts.[9]

The Rajputana desert is of recent origin within historic times. There is evidence that the region north of Kutch and south of the Punjab was a fertile and forested tract country, supporting well populated cities, even so late as the time of invasion by Alexander the Great (323 BC). Old rivers flowing through Rajputana have fought a losing battle against the inroads of the desert and are now traceable only through their dry, forsaken channels.

Climate

It is mainly influenced by the area's inland position and the prevalence of air of the continental type during the major part of the year. Extreme dryness with an intensely hot summer and cold winter are the characteristics of the climate of this area. In summer months, the temperature reaches up to 47°C, whereas in winter months, it is between 21°C and 7°C with the mercury sometimes touching the zero point during the cold waves caused due to western disturbances passing across north India. Only during the monsoon months—July to September—air of oceanic origin penetrates the region and causes increased humidity, cloudiness and precipitation. The average annual rainfall is 660 mm about 70% of which is received during the monsoon months. April to June is the period with the highest incidence of thunderstorms and dust storms. Fog, sometimes dense, occurs in the winter months.

Flora

Due to geographical location and sub-tropical climate of the region, its plant cover is varied. The permanent vegetation of the ridge abounds in thorny tree species and a few scrub species. *Acacia arabica* (kikar), *A. catechu* (katha), *A. leucophloea* (ronj) and *A. modesta* (phulahi) are the species of *Acacia*. *Prosopis* is the co-dominant member, other prevalent members are—*Salvadora persica* (pilu), S. *oleoides* (haldu), *Balanites roxburghli* (hingol), *Azadirachta indica* (neem), *Butea monosperma* (dhak), *Ehretia* and *Dichrostochys*. The wild date-palm (*Phoenix sylvestris*) occurs as a few isolated clumps. The chief shrub constituents of the permanent vegetation are *Capparis sepiria* (heens), *C. decidua* (karor), *Ziziphus nummularia* (ber), *Maytenus sevegalensis* (kakera), *Cordia dichotoma* (lasoora), and species of *Grewia*, *Adhatoda vasia* (bansa) grows as a very common gregenious undershrub co-dominant with *Capparis sepiara*.

In the palaeochannels and in the geological foldings of the quartzite rocks due to which depressions have been formed the species that grow are—*Anogeissus pendula* (dhoy), *Diospyras cordifolia* (tendu), *Jasminum multiflorum* (safed chameli), *Tecomella undulata* (rohera), *Securinega leucopyrus* (haithe) and *Ziziphus oenoplia* (ber).

Some of the common herbs forming the ephemeral vegetation are *Achyranthes aspera* (lapa), *Peris rophe biccalyculata* (missi), *Tephrosia purpurea* (jhojhru), *Boerharia diffusa* (purarnava), *Triumpetta rhomboidea* (kasni), *Sesamum indicum* (til), *Cleome viscose* (hulhul), *Tribulus terrestris* (gokhru), *Ocimum americanum*, species of *Corchorus* and *Indigopera* and several grasses and sedges. The thorny shrubs provide support to the growth of many climbers and twiners such as *Coccinia doemia, Rivea hypocrateriformis* (amarbel), *Cryptostegia grandiflora, Rhynchosia minima, Trichosanthes cucumerina* (rambel) and the semiparasite *Dendrophthoe falcata* (banda).

Fauna

The carnivorous animals generally found are—Hyaena hyaena (lakarbagha), *Canis lupus* (wolf), *Vulpes bangalensis* (fox), *Cavis indicus*, *Cavis aureus* (jackals) and *Panthera pardus* (leopard), *Herpestes edwardsii* and *H. amopuntalus* (mongoose). The Ungulatas are *Sus cristatus* (wild boar), *Antilope cervicapra* (the black buck), *Bosepaphus trago-camelus* (nilgai). Apart from these, porcupines, hares, rats, squirrels are also found. (The porcupine) *Hystrix indica*, *Lepus nigricollis* (hare), *Rattus rattus* (rat). Amongst the birds, Corvus macrorhynchos *(jungle crow)*, Streptopebia *senegalensis* (wild dove), *Turdoides straictus* (jungle babler), *Pioceus philippinus* (weaver bird), *Gyps bengalensis* (Bengal vulture), *Coracias bengalensis* (nilkanth) are seen in plenty in the rocky areas and valleys.

The Delhi Ridge had plenty of game even in medieval times is evident from the evidence of hunting palaces built by Firoz Shah Tughluq (AD 1351-88) of which four are known: the Malcha-Mahal or Malcha Bistdari and the Kushk-Mahal in the south Ridge, the Bhuli-Bhatiyari-ka-Mahal on the Ridge in Central Delhi and the Pir Ghalib on the northern Ridge near the Delhi University. Even in the second decade of the present century when New Delhi was taking shape, Sir Edwin Landseer Lutyens, the architect of New Delhi, found fauna of every description during the journeys north and south of Shahjanabad and to the east bank of the Yamuna. In a letter dated 20.4.1912 to Lady Emily Lutyens, he wrote: 'buck of all sorts, baboons, monkeys, jackals, hare, porcupine, water snakes, great fish, great tortoise which eat babies, snake, bats, flying fox, vultures, weird birds, and many lovely ones, a lizard of sorts, yellow and dry and three feet long.' (Irving 1981).

The Site of Anangpur

The palaeolithic site of Anangpur (Arangpur-28°27'30" N., 15°56" E), district Faridabad in Haryana State of India is located nearly 30 kms. south of Delhi beyond Surajkund lake on the quartzite table land of Tuglakabad-Gurgaon area which attains a height of about 243 m. above mean sea level and 30 m. above the surface of the present plain overlooking it. The area in the zone of the fifth palaeochannel of Yamuna, that was subjected to investigations, lies nearly 1 km. south of village Anangpur. The area of investigation in the zone of fourth palaeochannel is nearly 2 kms. west of the fifth palaeochannel area.

The Delhi Ridge continues southwards passing through now urbanized belt of Delhi, through the 'Shooting Range', Surajkund lake area and then to Anangpur and beyond. The comparatively low and rugged hills covered with naked reddish rocks exposed due to quarrying, deep ditches and scanty scrub jungle mostly of *Kikar,* are fast disappearing due to the spreading tentacles of housing colonies, high rise buildings and farm houses. In about a decade clearly visible remnants of palaeochannel V in the form of green depressions and one or two river silt exposed sections, would be lost for ever.

Village Anangpur derives its name from the Tomar Rajput, Anangpal of 10th century AD, who chose the area to built his capital. Remains of the fort and masonry dam built by him still stand witness to their creator.

Though the sites here have been mainly described in the name of Anangpur actually they encompass a much larger area now named variously as 'Suraj-ki-Khan' etc. on the names of persons in whose names various quarry areas were leased out. In the naked rugged terrain, in the absence of any permanent prominent land marks, the only way to locate them is in the name of quarry owners. After total deforestation, the entire area for several kms. looks alike with small hillocks of quartzite out-crops shining in the sun. The area is now criss-crossed with *kuccha* roads created by the constant movement of sand and ballast laiden trucks and one or two small huts of the quarry workers.

Anangpur and its surroundings are perfect examples of the colossal environmental destruction caused by man to construct the capital of India. Due to disappearance of vegetation, almost all the palaeochannels now variously named as *Budhi-nala* (old stream) etc. have dried up. The names given to them like the one mentioned above also speak of their antiquity and how a single name given by illiterate folk becomes so meaningful for the investigator.

Oswald Wood[10] while writing about Yamuna says, 'the river enters the district at a height of some 710' and leaves it at about 630' above the sea level, with a course within the Delhi limits of rather over 90 miles and an average fall of between 10 and 11 inches to the mile.

It passes close under the fort at Delhi, and it must always have rounded the eastern point of the rocky 'Ridge' at Wazirabad. But in the northern part of the district, it appears formerly to have had a course much to the west of that which it holds at present. The drainage channel called the *Budhi nala* which comes down under the very doors of Sonipat, would seem by the confrontation of the country, to have been the old bed of the Jamuna, and this is supported by strong and general tradition.

....

Summary And Conclusions

The palaeolithic site in the Aravallis near Delhi is one of the biggest prehistoric sites of the country. The evidences around Anangpur in palaeochannels IV and V and further indications make it more important as in the successive palaeochannel zones of Yamuna, which passed across Aravallis near Delhi, during pleistocene period, various developmental stages of Early Stone Age are available. The entire area was a factory site as tools in various stages of preparation along with cores and waste flakes are littered all around and embedded deep in sections exposed by quarries. With the shift in the course of Yamuna, early man shifted to the new area of shift.

Early man preferred the area around Delhi as all the requisites required by him to inhabit the area were available in plenty here. Moreover, the climatic conditions were also not very harsh.

For palaeolithic men of Delhi, the Yamuna, which had plenty of water then, provided the basic requirement. The quartzitic and sandstone outcrops of the rejuvenated Aravallis in pleistocene times provided the desired raw material while the soil cover formed on these rock formations, partly by weathering and partly by silt deposition brought from the higher reaches of Himalayas, under suitable climatic conditions, had plenty of vegetational growth. In these jungles of Aravallis, varieties of animals were available, to be used as food by palaeolithic men.

The Early Stone Age, represented by the Acheulian culture, is clearly available in palaeochannels IV and V zones. While in palaeochannel IV area, the tool kit predominantly belongs to Early Acheulian cultural phase, Late Acheulian cultural phase is dominant in palaeochannel V area. Late Acheulian assemblage comprises both finished and simple artefacts. The tool types represented are hand-axes, cleavers, picks, chopper, discoids, knives, points and scrapers. Majority of the artefacts are made on fine grained quartzite while only a few are on sandstone. Normally hand-axes and cleavers of Late Acheulian phase are on flakes but at Anangpur they are mostly on cores. Due

to this reason they are bifacial in nature and there is almost a complete absence of cortex on the surfaces. The type and patterning of flake scars and retouching suggest the use of controlled flaking to achieve the final shape of the tools. High percentage of edge damage noticed in hand-axes of palaeochannel V suggests their use of certain heavy duty activities.

The section available in a quarry in palaeochannel IV area suggests that the area remained water logged for a considerable period of time. In this section tools of Early Acheulian phase are found embedded in the sections just above the weathered bed-rock and below the thick calcareous deposit. In the manufacture of tools, more fine grained quartzite and sandstone has been used. Few pieces of hand-axes have also, been shaped out of quartz core. Like palaeochannel V, here also for shaping hand-axes and cleavers, cores have been preferred than flakes. The tool kit comprises hand-axes (43.4%) cleavers (32.4%), points (12.5%), scrapers (9.4%) and discoids (2.7%). The hand-axes and cleavers are much bigger in size than their counterparts from palaeochannel V, with fewer flakes removed from them.

By making proper investigations in other earlier palaeochannel areas, earlier evolutionary sequences in tool making etc. could be traced. The site has the potentiality of becoming a text book example of prehistoric site and that too, so near or almost in Delhi. The whole area could be preserved as a protected prehistoric site for the future.

Notes and References

1. Krishnan, M.S., *Geology of India and Burma*, Madras, 1960.

2. Ibid., 1960.

3. *Quarterly Journal Geological Society*, Vol. XIX. 1863, p. 318. The above example illustrates, what, in a general manner, was the behaviour of the majority of the rivers of this tract, including the Indus itself, which is supposed to have been originally confluent with the Ganga.

4. General Cunningham, *The Ancient Geography of India*, 1871.

5. Mj. C.F. Oldham, 'On the Lost River of the Indian Desert', *Calcutta Review*, 1874.

6. *Physical Geography of Bengal*, from the Maps and Writings of Maj. J. Rennel, 1764–1776, Calcutta, Bengal Secretariat, 1926.

7. *The Times of India*, Bombay, 29 March 1993, p. 10.

8. T.H. Holdich, Imperial Gazetteer, Vol. I.

9. *Records of G.S.I.* Vol. X, Pt. 1, 1877 and *Mem. of G.S.I.*, Vol. XXXV, Pt. 1, 1902.

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PART II

Protohistoric Settlements: Late Harappan Remains at Bhorgarh and Mandoli

Mandoli: A Late Harappan Settlement in Delhi

B.S.R. Babu

Mandoli is a small village (28° 42'N 2° 19'E) located on the left bank of the river Yamuna near Nand Nagari, 16 km from Delhi Railway Station on Delhi-Ghaziabad highway. The ancient mound lies to the south-west of Mandoli and to south of Saboli villages. The site has been occupied by the modern village except for the north and north-east portion.

Explorations carried out some time ago by the Department of Archaeology, Government of the National Capital Territory of Delhi revealed that the site has been in occupation right from the Late Harappan times upto the Late Historical times. On the basis of surface finds excavations were conducted at the site for two consecutive seasons i.e., 1987–88 and 1988–89 under the supervision of the present author with the following objectives:

(i) to investigate the nature and extent of Late Harappan element;
(ii) to find out the horizon of the Painted Grey Ware in this region; and
(iii) to establish the cultural sequence of the site.

On the basis of the material remains, the deposits have been assigned to five cultural periods, viz.,

Period I	Late Harappan,
Period II	Painted Grey Ware,
Period III	Distinguished by a black slipped ware,
Period IV	Sunga-Kushana, and
Period V	Gupta times.

The relevant characteristics of each period are as under:

Period I

Late Harappan settlement was found at the earliest and lowest level. The occupation appears to be small in size as no structural vestiges by way of house-

Excerpted from C. Margabandhu and K.S. Ramachandran (eds.), *Spectrum of Indian Culture*, Agam Kala Prakashan, Delhi, 1996, pp. 98–101.

complex etc. have been noticed. Yet yellow coloured rammed earth floor with post-holes in circular and arc fashion traced in couple of trenches give an idea of the Late Harappan residential pattern here. It is interesting to note that on this mud floor is found *in situ* a burnt terracotta object, coarse in fabric along with traces of ash, perhaps the remains of a hearth.

Shapes of pottery reconstructed from sherds in this level include jars with splayed out or beaded rim, vase with disc base, etc. All the shreds showed evidence of wear due to water-logging caused by flood activity during this period. This inference is supported by the evidence of thick deposit of 30 to 35 cm of waterborne silt and sand immediately overlying the Late Harappan settlement. Pottery was all fast wheel-thrown with regular striation marks. The ceramics have been turned out of well-levigated clay and of fine and sturdy fabric, kiln-fired and occasionally coated with dull red slip.

Antiquities of this period include a biconical bead and a circular terracotta cake.

Period II

After a little gap, the site was inhabited once again by the people using Painted Grey Ware. The fabric of this pottery is very fine; the colour ranges from ashy to dark grey. Most of the pots are wheel-turned. Common forms are bowls and dishes with straight or convex sides. Simple designs like dots, dashes, loops, concentric circles, wavy lines, strokes etc., were painted usually with a black pigment. In some cases, reddish brown colour with a group of black wavy lines both internally and externally and a dark ashy well-baked sherd of a bowl of fine fabric with a dull red coloured thick horizontal rim band were noteworthy. It is associated with a fine thin grey ware and red ware. Such pottery types of PGW have been reported earlier from Hastinapur, Mathura, Atranjikhera and Kausambi. Residential vestiges comprised of rammed-mud floor and post-holes. Among other important antiquities discovered were terracotta animal figurines, *ghata*-shaped beads, discs decorated with designs at the edges, pyramid-shaped hollow ivory piece, ivory button, beads of banded agate including etched carnelian bead, antimony rod and nail parer made of copper, besides some iron slags.

Period III

This period is represented by the people using black slipped ware associated with plain red ware and black-and-red ware. Bowls, vases, jars, dishes, basins are some of the types in the ceramics. Mud floors of the previous period continued.

Terracotta animal and human figurines, beads, discs, shell bangles, ear-studs etc. are some of the antiquities found from this period.

Period IV

This period can be sub-divided into two phases viz., IV A Sunga and IV B Kushana.

Period IV A

This is characterised by simple hand-made and wheel-turned potteries of red ware, of medium to coarse fabric, featureless rim, with stamped and incised designs recalling the Ahichchhatra type.

Terracotta animal figurines, gamesman, shell objects, ear studs, fishing net weights are some of the antiquities found from this level.

House-complex with mud lumps was noticed in one of the trenches. Overlying this structure was Kushana burnt brick structure indicative of the succeeding sub-period.

Period IV B

The Kushana period is indicated by well-constructed houses of burnt bricks. A house-complex was exposed and the bricks measured 33 × 22 × 6; 31 × 22 × 5; 32 × 21 × 6 cm. Two successive floors of mud and lime were noticed associated with an oven in one of the rooms. It is also interesting to observe that mud-bricks were seen underneath the burnt brick structure in one of the trenches. Mandoli appears to have been a prosperous town during this period.

Excavation brought to light a good number of antiquities. Notable among them include the artistically executed voluptuous female figurines copper coins belonging to Vasudeva II, and a rim portion of a vase inscribed in Kushana Brahmi characters. Besides terracotta human and animal figurines, other antiquities found include beads of semi-precious stones, shell objects, terracotta plumb-bob, dabbers, copper rings, iron objects like arrow-head, sickle, spear, etc.

The ceramics include carinated *bandis*, spouted vessels, spouts and miniature vessels.

Period V

The mound was finally occupied by the Guptas as evidenced by the typical Red Polished Ware and other artifacts of contemporary affiliations. Noteworthy find

is a well-baked terracotta sealing with a few lines in Gupta Brahmi characters decorated with a conch at the top. Ceramics include red slipped moulded spouts, incurved bowls with flaring sides, etc.

Importance of the Site

Mandoli is an important protohistoric site in Delhi area which has yielded vestiges of both Painted Grey Ware (PGW) and Late Harappan cultures. Some of the important PGW sites and Late Harappan sites in and around Delhi are indicated in maps.

Occurrence of PGW from the stratified layers in Delhi for the first time is noteworthy. This evidence shows that the people of ancient Delhi were in contact with neighbouring settlements like Hastinapur, Sonepat, Panipat, Indrapat, Tilpat, Mathura, etc. On the basis of similarities of the ceramics of this period with other sites, period II of Mandoli can be assigned to a time bracket of 1100 and 600 BC.

Similarly, the discovery of Late Harappan pottery from the stratified layers here again, for the first time, is also significant. From a study of the distribution pattern of Late Harappan sites it is clear that there was a large-scale migration of these people from the west towards east resulting in a considerable increase in the number of sites in Haryana and Western UP. There are about 120 sites in UP alone spread over Saharanpur, Muzaffarnagar, Meerut and Bulandshehr districts on the river Yamuna and its tributaries. Hence it can be safely assumed that Mandoli might be one of the settlements that came up during the process of migration from the west. Though there is a large scale expansion of Late Harappan settlements in Ganga-Yamuna *Doab*, it may be noticed that most of the Harappan cultural traits disappeared in this phase. The uniformity in the Harappan culture has been diversified in the later stage giving place to a few regional traits. Hence there is a gradual transformation which may be noticed in the settlement pattern and pot-forms during the Late Harappan culture. This aspect can be very well noticed if we study some of the sites like Kaseri, Ambkheri, Alamgirpur, Hulas, Atranjikhera, Bahadrabad, etc. and Mandoli should not be taken in isolation, but as one of the centres established during the migratory process.

The date of Late Harappan period at Mandoli may tentatively be fixed somewhere between 1500 to 1200 BC based on the pottery types of similar period of Late Harappan sites around Delhi and elsewhere.

Excavations at Bhorgarh

B.S.R. Babu

BHORGARH (LAT 28'5° N AND LONG 77'5° E) IS LOCATED AT A DISTANCE OF 30 KM. from Delhi railway station towards north of Delhi. The mound is situated 500 m. west of Bhorgarh village and 2 km. north-west of Narela railway station. Bhorgarh is well connected with Delhi by road also.

Originally, the mound was spread over several acres of land but villagers converted almost all the mound into an agriculture land after levelling the area, thus leaving a very small portion of mound intact. The eastern side of the mound houses a modern graveyard. Presently the mound is surrounded by cultivated field. The mound which remains intact measures 130 m. from east to west and 100 m. from north to south. The total occupational deposit of the mound is about 180 cm. Once upon a time, the river Yamuna used to flow near this mound but now it has changed its course and shifted about 10 km. towards south. Traces of the ancient mound may also be seen on the eastern side of the village behind the Government School near the bus stop which proves that part of the village is settled on the ancient site itself.

The Department of Archaeology, Government of Delhi, under the direction of Dr B.S.R. Babu had taken up excavation at this ancient site for two successive seasons during the years 1992–3 and 1993–4. Excavations yielded a four-fold cultural sequence from the Late Harappan period upto medieval time, covering a span of about 2500 years. The following cultural periods have been identified at Bhorgarh.

Period I:	Late Harappan (Second millennium BC)
Period II:	Painted Grey Ware Culture (First millennium BC)
Period III:	Kushan (Second and Third centuries AD)
Period IV:	Medieval (Sixteenth and Seventeenth Centuries AD)

Excerpted from *Puratattva*, No. 25 (1994–5), pp. 88–90.

Period I

Lowest level at Bhorgarh yielded Late Harappan material particularly the thick red ware pots. Though the habitational area of this period couldn't be traced, the discovery of graves of this period suggests that the habitational area must have been well within the periphery of the mound which might have been damaged by the cultivators or it might be still buried. Two graves were exposed. Grave pits were dug out in the alluvium of river Yamuna and later filled by the same soil and as such, while exposing the graves it became difficult to identify the pit-line.

Grave No. 1: It is an extended burial. The body was buried in almost north-south orientation. Three pots were placed behind the head as burial goods. Out of them one is a small bowl while other two are small globular vases of two different sizes. The skeleton has a long stretcher with calculated length of 176 cm. Both hands were folded from elbow and seem to have been placed on shoulders. The epithysis of the long bones are damaged. Bones of the leg portion (tarsel, metatarsel, phalanges) remained inside the section.

Grave No. 2: This is also an extended burial with almost north-south orientation and almost parallel to grave No. 1. Interestingly, this grave does not contain any burial goods. Left hand of this skeleton was kept straight parallel to the vertebral column. The skeleton was in very fragile condition.

Period II

Painted Grey Ware culture succeeded the Late Harappan at Bhorgarh. It has a rich deposit, measuring 45 cm. on average. Occurrence of PGW pottery in abundance at this site proves that this culture dominated Bhorgarh settlement once upon a time. The post-holes identified in one of the trenches suggest that people used to live in circular huts supported by wooden posts. In another trench, a hearth made of lump of clay was exposed.

As already pointed out, a huge quantity of PGW pottery was unearthed from the excavation at Bhorgarh. Important shapes are straight-sided bowls with flat base, deep bowls with sagger base and a miniature *hāndī*. Basin and vases of associated red ware fabric have also been noticed. PGW sherds were painted with black pigment either on inner or outer surface and sometimes on both sides. All designs were painted with free hand.

Circles, concentric circles, semicircles, flowers with three or nine petals, dotted designs, dots inside two parallel lines, strokes, wavy lines, intersecting loops, balloon design, hook design are only some of the common designs that decorated the earthenware. Most of the designs are similar to those designs found on the pottery of this period from Hastinapur, Ahichchatra, Attranijikheda.

Beads made of carnelian, clay beads of *ghata*-shape, terracotta animal figurines, hop scotches and fragments of iron implements are some of the other important antiquities of this period.

Period III

This site was reinhabited during the Kushan period. Structural activity has been noticed in two phases. The first one used mud bricks. In one of the trenches deeply excavated, it clearly shows the presence of mud bricks and two occupational layers as evidenced by mud floors. The second phase of activity is witnessed by burnt brick structures.

STR-1: This seems to be part of a house complex. Western part of the structure was destroyed and levelled by the farmers for cultivation purpose. There are seven courses of bricks.

STR-2: Three courses of bricks of the same size as used in STR 1 forming into a wall seems to be part of a house complex. Against this wall, a mud floor has been noticed. The floor was rammed with small pot sherds, stone nodules, etc. However, at a later stage, huge pits were dug out for dumping garbage.

In one of the trenches, an oven of this period was beautifully exposed.

Terracotta animal figures, one female, probably of Mother-Goddess(?), copper coins, terracotta beads, iron implements and two terracotta sealings with the legend 'SU PA KA SA' in Brahmi letters are some of the important antiquities discovered at the site.

A variety of pottery has been collected from the deposits of this period. The main shapes include typical incurved bowls, dishes, basins, sprinklers, *handis*, lids (with knobs and ink-pot type), lamps and different sizes of vases. Pots were decorated sometime with black pigment and rarely with white pigment. Geometrical designs were made near the neck portion. A few stamped designs were also noticed of which Sun motif is quite important.

Period IV

The main concentration of the medieval period is noticed on the eastern side of the mound. Unfortunately, the entire portion was destroyed by the farmers. Hence considerable evidence of that period could not be gathered. A small wall made of *lakhori* bricks in four courses has been exposed. Many lakhori brick structures erected during this period may be noticed within 2 km area which includes a huge tank constructured at Narela dating back to the Mughal period.

Sherds of porcelain and celadon ware have been collected along with Hukka chelam made of red ware from this level at Bhorgarh.

Bhorgarh and Mandoli

B.R. Mani

THE ANCIENT MOUNDS AT BHORGARH (LAT. 28°49′ 45″ N, LONG. 77°5′ 15″ E) IN north Delhi near Narela were discovered about twenty-five years back and explored thoroughly by the teams of Archaeological Survey of India in 1973–5 and 1991–2. Among the three mounds, one is fully inhabited while another has been levelled and further dug for taking soil for brick manufacture and the third is gradually being sliced from all the sides for making more space for agricultural fields all around and partly occupied by a modern graveyard. This mound measures about 100 m in north-south and 57 m in east-west direction. During the first exploration it was 130 m in east-west orientation and thus at present more than half of the mound has been levelled to the ground.

During the first exploratory survey, two brick structures of Kushan period having 7–8 courses of bricks measuring 18 × 24 × 7 cm were located in the eastern side of the mound. Similar brick structure with 8 courses of burnt bricks was again encountered in the western section of the mound during the explorations conducted in September 1991 under the direction of the author and C.L. Suri of Archaeological Survey of India when the joint exploration team of Delhi Circle and Excavation Branch-II of the Archaeological Survey of India visited the site. Pieces of roof tiles were also collected. A Kushan copper coin and red ware of Kushan period, occasionally with stamped motifs like *Srivatsa* confirmed the Kushan occupation of the site in the beginning of the Christian era. During the same exploratory survey, Painted Grey Ware, black slipped ware, black-and-red ware, Northern Black Polished Ware sherds in fairly large quantity suggested the early occupation of the site at least in the second half of the second millennium BC or in the beginning of the first millennium BC. Similarly, the broken sandstone sculptural fragment and glazed ware sherds collected from the site suggested the occupation of the site in the early and late medieval periods.

Excerpted from B.R. Mani, *Delhi: Threshold of the Orient (Studies in Archaeological Investigations)*, Aryan Books International, New Delhi, 1977, pp. 17–21, 23–5.

Similar results were already obtained during the first exploratory survey when Painted Grey Ware comprising bowls with incurved sides having flat or rounded base, dishes, basins and miniature vase were found. Their designs included slashes, dots, wavy lines, intersecting lines and thick bands on both the inner and outer surfaces of bowls and dishes. A dull red ware was also found associated in the ceramic assemblage of the early period. Amongst antiquities collected from the site, terracotta animal figurines, beads, balls and hop-scotches besides a fragmentary discular ear ornament are important. Amongst three circular copper coins found during first exploratory survey, two of them were uninscribed cast coins, one of which contained a tree in railing motif on obverse and bull on reverse, while a tree was identified on obverse of another of which the reverse symbol could not be identified. The third one was badly mutilated.

The Department of Archaeology, Government of Delhi excavated the site for two successive seasons during 1992–93 and 1993–94 under the direction of B.S.R. Babu who has established that total occupational deposit of the mound is about 1.80 m which was considered to be more during earlier explorations. However, a careful examination of the exposed sections at the site still shows that the complete habitational deposit at the site is more than 4 m in thickness. The MSL of the surrounding ground level is about 214 m and the highest point of the mound is 219.5. Excavations at Bhorgarh have yielded a four-fold cultural sequence from Late Harappan to medieval period covering a span of about 2,500 years as proposed by the excavator—

Period I: Late Harappan (second millennium BC)
Period II: Painted Grey Ware Culture (first millennium BC)
Period III: Kushan (second and third centuries AD)
Period IV: Medieval (sixteenth and seventeenth centuries AD).

There may be difference of opinion in accepting the cultural sequence, particularly the last two cultural periods as the site has yielded during earlier explorations evidence of Northern Black Polished Ware, black slipped ware and associated red ware along with uninscribed copper cast coins which must have predated Period III. The excavator B.S.R. Babu himself has mentioned two phases of structural activities of Period III—the first one showing the presence of mud bricks and two occupational layers as evidenced by mud floor and the second one showing burnt brick structures—although he has not distinctly described associated pottery and artefacts from both the phases. The thickness of deposit of post-PGW period and the availability of material belonging to the pre-Kushan period suggest that the site was definitely inhabited during Maurya-Sunga period. The first phase of the so-called Period III may represent the same phase or period. Similarly, the site has yielded evidence of sculptural fragments and such red ware and glazed potsherds which suggest that the site was occupied during early medieval times.

The importance of the site is due to the discovery of two parallel extended burials of Late Harappan period in the lowest levels at the site which has been classified in Period I by the excavator. The burials in almost north-south orientation were dug out in the alluvium of river Yamuna and later filled by the same soil. In the first burial three pots—a small bowl and two small globular vases—were placed behind the head as burial goods. Calculated length of the skeleton was 1.76 m whose hands were folded from elbow and placed on shoulder. No pot was found in the second burial in which the left hand of the skeleton was kept straight and parallel to the vertebral column. Habitational remains of the Late Harappan period were not found and it has been suggested by the excavator that it may be traced in the vicinity.

Average thickness of the succeeding period represented by Painted Grey Ware was found to be 45 cm. Post-holes were noticed suggesting wattle-and-daub structures, circular on plan. A hearth made of lump of clay was also exposed. Painted Grey Ware shapes include straight-sided bowls with flat base, deep bowls with sagger base and miniature *handi* decorated with painted designs with black pigment forming circles, concentric circles, semicircles, flowers with three or nine petals, dotted designs, dots inside two parallel lines, strokes, wavy lines, intersecting loops, balloon design, hook design etc. which are common designs of the pottery of the class. Carnelian and terracotta beads of *ghata*-shape, terracotta animal figurines, hopscotches and fragments of iron implements were also found from the levels of Period II.

In the levels of Period III, the first phase contained mud brick structures. From the levels of second phase two structures of burnt bricks belonging to two house complexes were noticed. Mud floors and an oven were also exposed. Among important antiquities mention may be made of two terracotta sealings with the legend *Supakasa* in *Brāhmī* characters, terracotta beads and iron implements. Kushan incurved bowls, dishes, basins, sprinklers, *handis*, lids (with knobs and inkpot type), lamps and vases in red ware formed the ceramic assemblage. Painted and stamped pottery was also found.

From the eastern side of the mound, remains of Period IV were found in much disturbed state. Part of a *lakhauri* brick wall with four courses was noticed. Sherds of porcelain and celadon ware along with *hukka-chilam* of red ware were found from the levels of Period IV suggesting their association with Mughal period.

Mandoli

Another ancient mound located south-west of village Mandoli and south of Saboli has provided evidence of Late Harappan and Painted Grey Ware (PGW)

cultures. The site is located with (lat. 28° 42' 10" N and long. 77° 18' 30" E) at a distance of about 18 km from Delhi Railway Station towards east and towards south of Loni, another ancient mound.

Excavations at Mandoli were carried out for two consecutive seasons from 1987–8 to 1988–9 by the Department of Archaeology, Government of Delhi under B.S.R. Babu with the objective to investigate the nature and extent of Late Harappan element and to find out the horizon of the Painted Grey Ware in Delhi which was not very clear about ten years back and of course with the objective of establishing the cultural sequence of the site. According to the excavator, B.S.R. Babu, the cultural sequence of the site represents following cultural periods—

Period I: Late Harappan
Period II: Painted Grey Ware
Period III: Distinguished by a black slipped ware
Period IV: Sunga-Kushana, and
Period V: Gupta times.

The earliest levels at Mandoli have yielded red ware sherds of jars with splayed out or beaded rim, vase with disc base etc. showing wear due to waterlogging, supported by the fact that immediately overlying these levels is a thick deposit of 30 to 35 cm water-borne silt and sand. Pottery made out of well-levigated clay and of fine and sturdy fabric is occasionally coated with dull red slip and has been identified by the excavator as Late Harappan pottery. A biconical bead and a circular terracotta cake have also been found from the earliest levels. Yellow coloured rammed earth floor with post-holes in circular and arc fashions and a hearth suggest that the earliest settlers lived in houses made of wattle-and-daub.

In our opinion, perhaps it is too early to call the earliest levels at Bhorgarh and Mandoli as Late Harappan for want of more material. More research and data may solve this problem in future. At present we may assign these levels to the pre-PGW period only. The excavator has also pointed out that during the migratory process of the Late Harappans, most of the Harappan cultural traits disappeared and the earliest levels of Mandoli represent the same which can be dated between 1500 and 1200 BC.

After a little gap, the site was occupied by the people using fine Painted Grey Ware. Bowls and dishes with straight or convex sides and having designs like dots, dashes, loops, concentric circles, wavy lines, strokes etc. have been found painted usually with black pigment. Fine thin grey ware and red ware are associated pottery. Rammed mud floor with post-holes gives an idea of settlement pattern. Associated antiquities comprise terracotta animal figurines, *ghata*-shaped beads, terracotta discs decorated with designs at edges, pyramid-

shaped hollow ivory piece, ivory button, leads of agate and etched carnelian, copper, antimony rod and nail parer besides pieces of iron slags. A time bracket of *c.* 1100 to 600 BC has been assigned to the assemblage.

Period III is represented by black slipped ware associated with plain red ware and black-and-red ware bowls, vases, jars, dishes, and basins. Settlement pattern followed the previous pattern. Associated antiquities include terracotta human and animal figurines, beads, discs, shell bangles and earstuds.

Period IV has been divided into two phases—

Phase A—Sunga

Phase B—Kushan.

Phase A is represented by red ware of medium to coarse fabric, featureless rim with stamped and incised designs. Terracotta animal figurines, gamesman, shell objects, earstuds and fishing-net weights were found from this level besides evidence of mud lumps for making structures. In the succeeding Phase B, structures of burnt bricks measuring 33 × 22 × 6 and 31 × 22 × 5 and 32 × 21 × 6 cm were found. Two successive floors of mud and lime were noticed associated with an oven in one of the rooms. Terracotta female figurines, copper coins belonging to Vasudeva II and rim portion of a vase inscribed in Kushan *Brāhmī* characters are important finds of the levels of this phase. Other objects include terracotta human and animal figurines, beads of semi-precious stones, shell objects, terracotta plumb-bob, dabbers, copper rings, iron objects like arrow-head, sickle and spear. Red ware carinated *handis*, spouted vessels, spouts and miniature vessels were also found.

The last Period, i.e. Period IV at the site is represented by typical red polished ware of Gupta period. A terracotta sealing with a few lines in Gupta *Brāhmī* characters decorated with a conch at the top is a notable find. Ceramics have also sometimes red slip on moulded spouts and incurved bowls with flaring sides.

Protohistoric Archaeological Remains of Union Territory of Delhi

R.C. Thakran

The area of concentration is comprised of north-western parts of Union Territory of Delhi. Archaeological potential of this area is tremendous like other adjoining parts of Haryana in the west.[1] This significance was brought out long back[2] by some casual attempts producing some scattered protohistoric settlements. A systematic, intensive and fresh combing was long overdue by the time the writer undertook this assignment during this summer. Here this exercise was aimed at combing this zone systematically to bring out the whole range of ancient deserted, settlements alongwith their locational environments, size and cultural milieu. This will help in understanding the influence of nature on their choice of site selection, the process of expansion at respective settlements and dissemination over the landscape of human activities. Further the past patterns of human life could be visualised with the help of prevailing ecological conditions, patterns of land-use and subsistence activities. In other words this is an exercise to explore the possible linkages and levels of interactions among men, their means of production and environment in the past, for that matter let us first have a brief discussion on the geographical background of this belt.

The Geographical Setting

The area is situated to the north of the capital city of India and is demarcated by the sole perennial river in the east. In its northern and southern parts it is encircled by Sonipat and Rohtak districts respectively. From the south it is surrounded by southern parts of the Union territory of Delhi. Physiographically this is composed of two contrasting zones—the old alluvium and the new alluvium separated almost north-south by a winding dividing line termed as 'Western Margins of the Khadar' somewhere else by the writer.[3] It would not

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be inappropriate to elaborate these points separately in the following discussion for their distinct features.

The Old Alluviums

Let us first take the old alluvium which is popularly known as the 'Bangar' locally situated in the western section. This forms the easternmost part of the Bangar in the west and is about 30–35 feet higher than the adjoining low-lying Yamuna Khadar in the east.[4] It is known as a dry area because the rainfall is erratic and low tending to reduce to semi-arid conditions. And in absence of any seasonal or perennial river system, the sub-soil water-table is low varying from 12–20 feet with brakish to saline water containing high salt content.

The soils of this pocket are composed of loam, clay and aeolin sandy soils. Since salt contents are on the higher side, saline patches occur at intervals. Most of the soils are very rich in water retention, poor in percolation and aeration. Such soils generally suffer from high fissure tendency and water-logging affecting inversely growth, maturity and yield capacity of crops. Soil temperature, especially in the root zone, experiences quick fluctuations as a result of frequent changes in climatic conditions. Nevertheless, the soil is considered to be very fertile if sufficient suitable water is available for irrigation. So far as the vegetal cover is concerned, it is generally thin and poor, mainly consisting of saline and drought resilient plants.

These plains are usually considered to be even but interestingly are not uniform at the micro-level. The entire setting appears to be very rich composition of flat and low-lying patches promising a variety of subsistence activities according to changing seasons. At the macro level these plains do have a tendency to slope down in the south-east direction conforming to the general patterns.

The New Alluvium

This low-lying new alluvium is situated to the east of the old alluvium and is locally known as the Khadar. It is precisely the recent alluvium formed by the river Yamuna traversing in the eastern section of this zone. The river Yamuna could touch almost all the points on the western margins, when in full swing but for the modern man-made checks in the forms of bunds, drains, canals, road, railway track, etc. These plains run almost parallel to the western high lands in the north-south direction with a south-east sloping tendency.

The soil of this zone is composed of clay, silt and sand particles. Mainly silt and sand are found to be in a dominating position resulting in salty and sandy loam soils. Such soils enjoy high water absorbing capacity and greater possibility

of aeration. Salt contents are on an average very poor. It is easy to cultivate such soils with the simplest possible implements and prepare them with fewer number of tillings. Here the water table is generally near the surface and is available in abundance. This helps to maintain a moderate soil temperature. It hardly gets affected by ongoing climatic fluctuations which helps the process of growth, maturity and crop yields. The vegetal cover was in complete agreement with the natural conditions and the area witnessed a thick growth of vegetation before the introduction of modern agricultural technology.

Being easternmost pocket of the semi-arid region of northern India, this occupies a significant position in terms of climatic conditions. This forms a conjunction point of extensions of western dry and eastern humid zones. Extremes on both the sides are experienced here in all the three major seasons—winter, summer and rainy. The driest period of this century, we experienced here in 1987–8. The most striking feature is its unpredictability. This tends to expose ill-equipped people to innumerable unforeseen hardships.

Distribution of Settlements

The scatter of explored settlements over the landscape is a very interesting index of past subsistence activities. This highlights an ongoing process of interaction of man with natural forces exhibiting fluctuations in their relations with nature. Let us have a brief look on these relics of past subsistence activities.

Protohistoric Settlements

Qutubgarh Thali-wala-Kheda: pH. 28°47'N. Lat., 76°60'E. Long. east of the village on an elevated aeolin sandy soil. The ancient remains belong to the pre-Harappan period and cover an area of 35 m × 50 m with east-west orientation. The cultural deposition is almost nil as the site is under intensive cultivation. Among the cultural artifacts, mention may be made of terracotta bangles, oval sling balls, rimless thick sectioned sherds of bowls and vessels, thick red pot-sherds with finger wavy lines on the exterior without any application of painting. The surroundings of this settlement are very interesting since the site is situated on aeolin sandy soil radiating over a km around it. The undulating surface with all-round sloping tendency is another significant feature. To the north of this site there used to exist a big natural pond retaining water for years together, which is now levelled by farmers.

Jatkhod-Thali-wala-Kheda: I. pH.28°46' N. Lat., 76°61'E. Long. This site is also located on an elevated aeolin sandy soil at about one km north of the same village in the fields of late Madu Singh. It stands only half a km south-

east of the foregoing settlement. The area of this settlement is 40 m × 50 m with almost east-west orientation along the longer axis of water source in the form of a natural pond. So far as the cultural material is concerned the whole range of cultural artifacts bears striking affinity with that of the previous settlement, except appearance of a piece of a dish-on-stand with flaring rim with signs of ill-firing as the section is black. The currency of artifacts is limited and more so because of the disturbed nature of the site.

Jat Khod Kheda—II: pH 28°41′ N. Lat., 76°58′E. Long.

The ancient site is 1.5 km east of the village and on the approach road from Jat Khod to Majra Dabas. This is also located on a lightly elevated sandsoil which experienced more sand deposition for 2 to 3 feet in subsequent times as the remains are now buried under it. It is a chance find. The farmers have leveled the area. The remains belong to the Late Harappan culture as shown by the presence of pot-sherds with flowing finger marks on the exterior with signs of red slip of fugitive nature of pieces of dish-on-stand with drooping rim and remains of faience bangles. Perhaps more remains could have been gathered had the site been completely exposed. The size of the site is not available but if the poor frequency of material remains is any indication, it must have been of smaller size. The surroundings of this site are not at all conducive these days. Because it is surrounded by saline soils of uneven nature and there is a long moderately deep depression to the south-east edge of the mound. The sub-soil water is not good for any purpose.

Nangal Thakran—I pH 28°44' N. Lat., 77°01'E. Long. If we take a north-eastern direction from the previous site we will come across another late Harappan site at a distance of 4 km as the crow flies. The area where the site is situated is locally known as Gogla-wala-khet. This area is once again elevated and having aeolin sandy soil. This site was also a chance find exposed during digging up of a water channel at a depth of about 3 feet. Some pieces of a vase with flanged rim, narrow neck and bulbous body typical of late Harappan phase were recovered along with pieces of faience bangles and red sand stone balls. The site is completely levelled and is under cultivation now. It seems that the size of this site would have been small as that of the previous settlement. So far as the surroundings are concerned there existed one shallow natural pond in the south which is now levelled and turned into a field. This might have served as a natural source of water supply in the past. Before the beginning of the green revolution there existed a thick vegetation cover but surely of salinity resilient plants. Anyway, this would have provided tremendous opportunities for hunting.

Nangal Thakran—II: LH, P.G.W. (28°40'N.Lat., 77°06'E.Long).

Moving to the north for almost 4 km from the previous site we reach to the west of village Nangal Thakran where this site exists. It is near the south-eastern edge of the boundary wall of the Government Boys Senior Secondary School, Nangal Thakran. This is now completely disturbed partly by earth diggers and partly by encroachers so that hardly any cultural deposition is intact. But pottery belonging to Late Harappan times along with pieces of faience bangles and painted grey ware were collected from here. Some terracotta beads were also picked up. To the north of the mound there exists still a huge natural lake, pond running north-south which people have not seen dry for the past many years now. This still forms an assured water source. There used to be very dense vegetation cover, basically of salinity resistant plants. The soil to the south is elevated. To its south-east, it is of low-lying and clayey nature. All these seem to point to a rich environment.

Bhorgarh Kheda: P.G.W. & EH. 28°49' 02"N. Lat., 77°6'4'E.Long.

Taking a north-east direction for about 8 km we reach another site at Bhorgarh (Bala 1977: 44–48), which is also on the elevated aeolin sandy soil overlooking the Yamuna Khadar lying in the east. This site is disturbed but seems to have been reasonably large as demonstrated by the sprinkle of pottery over a considerable area. Interestingly, the painted grey ware is relatively restricted to a smaller area. Here aeoline sandy rising, level and low-lying soils are available in the west. To the east lies the vast alluvial sandy track with sweet water and high water table. Wild grasses dominated the scene in the recent past. We can safely say that the surrounding are more conducive.

Alipur Garhi Khera: P.G.W. & EH. 28°47'N. Lat., 77°7'E. Long.

Just to the south-east of Bhorgarh is located another site with P.G.W. and early historical remains at a distance of 3 km. It is half a km west of the village Garhi and east of Bawana escape and south of Narela-Alipur road. This is also on the elevated mound but composed of the Yamuna sand. It is now almost completely disturbed by farmers, grave diggers and drain-walas. Unfortunately only a few pieces of PGW were recovered from here. The surrounding soil is composed of the Yamuna sand, silt and clay, comfortably dominated by the first constituent. The sub-soil water is reasonably good and near the surface.

Khera-Kalan-Kheda—P.G.W., & EH. 28°46'04" N. Lat., 77°7'E.Long.

To the south-west of the previous site at a distance of 3 km there exists one more settlement under the modern habitation of Khera Kalan village. This is also an elevated mound and appears to have been a moderately large settlement in the past. Remains of painted grey ware and pottery of early historical times can easily be picked up from here.[5]

Badli Kisarai Kheda: P.G.W., EH. & Medieval 28°43'N. Lat., 77°10'E.Long.

This site is also located on the western margins of the Yamuna almost 8 km south of Khera Kalan. It stands to the north of Pipar Sarai Village[6] and produced remains of painted grey ware from early historical and medieval times. To the north and east lies the low-lying flood plain of the Yamuna where new colonies like Jahangirpuri, Adarsh Nagar have appeared.

Baba Nau Gaza Kheda Timarpur: P.G.W. 28°40' N.Lat., 77°10'04" E. Long.

This P.G.W. site is situated on the northern most extension of the Aravalli range, on the western bank of the Yamuna, only 3 hundred yards south of Wazirabad bridge where Baba Nau Gaza Mazar is situated. The size is small.

Cultural Sequence

The foregoing description of the newly explored settlements highlights a variety of cultural strands. The highland Bangar belt seems to have been inhabited for the first time during the pre-Harappan times as indicated by some settlements—Qutubgarh and Jathhod-1. And subsequently remained in occupation through intervening phases of Late Harappan, painted grey ware and early historical periods till the modern villages appeared on the scene some time in the medieval period.

Locational Analysis

This is a very significant approach to have a better understanding of the past patterns of human life. In this connection the main points to be reckoned with are the following. Firstly, almost all these settlements are found located in the upland dry Bangar belt except one—Alipur Garhi which is slightly inside the Khadar belt. Secondly, all the sites are found on aeolin sandy rising pockets. Thirdly, away from any perennial river but surely near some permanent natural

water source. Fourthly, there is no Harappan site recorded from either the western margins of the Yamuna or the Khadar itself. Fifthly, in the PGW phase there appeared an increasing tendency to reach as near as possible to the western most extension line of the Yamuna as indicated by the emergence of several such sites along this line which, of course, continued in the subsequent phase also. And finally all these sites are found in a very rich natural environment offering a variety of avenues at the micro-level. This shows how mature and rich was their judgment of site selection. They preferred generally relatively elevated aeolin or alluvial sandy patches for being safe from threats of floods, wild animals and their contemporaries. There was a distinct possibility of approaching salinity as such soils are generally deficient in salt content. These soils are highly porous in nature and enjoy high water absorbing capacity, soak rain water quickly, provide better dry ground for inhabitants than the level and low soils. Moreover, such soils are hardly affected by rising water table. The emergent question here is why was this dry belt preferred over the low-lying rich Khadar? And how do you explain the ever increasing concentration of people in the Khadar these days?

The explanation of these queries lies in the very contrast of the two geographical zones, the subsistence trends in the past and present and the levels of population in two periods. The Yamuna Khadar is, of course, very rich in water, land forms and vegetation than the Bangar. As the technological scenario underwent transformation to more and more advancement, the area started having a considerable concentration of habitation. But a similar position was not there in the ancient past. The reason being people were not equipped with suitable tools to tame the natural environment. In the absence of matching technological know-how and suitable human organization, people were handicapped to face the Yamuna flood fury, to clear highly concentrated vegetation and exploit natural waters for their benefit. On the contrary, in the Bangar there were no such danger. Nature had enough provision for water and fertile loose sandy patches in between with less vegetal cover, to offer reasonable opportunities for subsistence to carry on their lives with their available technological know-how. That is why people preferred this zone over the Khadar.

Subsistence Patterns

To understand past process of subsistence, existing land forms, ecological conditions and prevalent modes of human interaction with natural forces are essential constituents to be taken into consideration. We have already noticed that the geographical and ecological conditions of the Bangar belt are not conducive in any respect even these days not to talk of the remote ancient past. But under such harsh conditions this area remained, consistently, a centre of concentration for human habitations right from Protohistoric period to

date. It is difficult to understand how these people could have managed unless they were equipped with suitable technological know-how, reasonable level of human cooperation, strong sense of resource management and practically effective strategies to eke out from the environment, minimum subsistence to save their bare existence. A survey of the agricultural tool types through times would reveal an imperceptible evolutionary trend. So far as technological aspect is concerned there appears to have been a severe limitation even after the introduction of iron. Iron tools remained limited, simple in nature and efficient till the introduction of the green revolution. These tools demanded tremendous labour to produce meagre food stuffs. Because to produce effective tools sufficient raw material, desired technological expertise, purchasing power among the people and a strong distributive network is called for. All these requirements were perhaps scarcely fulfilled in the past.

There is a fairly strong possibility of better human cooperation. Because it is human nature to put up a united resistance to natural onslaughts whenever there is any danger to their existence. The more the gravity of threat, the more unified and concerted the effort. This can be reinforced by the very fact of continued habitation in some form or the other in such hostile areas. In fact, mutual coordinated efforts were the key to their successful existence. But this was also not free from certain constraints. The level of their organization was bound to suffer from certain limitations such as low population size at respective settlements. This does not appear reasonable till we reach the early historical period if size of their settlements is any indication. Thus, the impaired organizational efficacy reduced them to somehow manage their existence.

The resource management capability of the people in the past can be analysed in the following manner. People consistently seem to have remained aware of their personal, collective, technological and resource handicaps. Under these circumstances, a well thought-out skill and strategy was called for to earn their livelihood. This is partly demonstrated in their approach to site selection for habitation, crop rotation and agricultural fields suited to prevailing environment, level of technological know-how and human cooperation. This was an approach to achieve optimum results under the given conditions, as we notice such practices these days also. Natural provision for fallow system was also helpful in this regard to promote chances for high yields. However, production level was subject to some other factors like storing facility and distribution mechanism which were unknown in these areas. Therefore, keeping in view all these drawbacks, people generally opted for high sandy loose soils, highly water absorbing and retentive soils supporting poor vegetation. It was easy to prepare such soils for dry crops with minimum labour and the simplest possible technology.

Notes and References

1. Thakran, R.C. 'The Western Margins of the Yamuna and Protohistoric Cultures', *PIHC*, 1988, pp. 649–57.

2. *IAR*, 1968–69, p. 64.

3. Thakran, *op. cit.*

4. *Delhi District Gazetteers*, Delhi, 1976, pp. 2–7.

5. *IAR*, 1968–69, p. 64.

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PART III

Archaeology and Legend

PART III

ARCHAEOLOGY AND TRADITION

Excavations at the Purana Qila, New Delhi

The 1954–55 Excavations*

WITH A VIEW TO ASCERTAINING THE ANTIQUITY OF THE SITE AND FINDING OUT IF IT was identifiable with Indraprastha of old, a trial-excavation was carried out by Shri B. B. Lal of the North-western Circle.

The excavation revealed that the site had been under occupation round about 1000 BC, when the people used distinctive bowls and dishes of the Painted Grey Ware. The metal chiefly used was copper, of which sickles, nail-parers, antimony-rods, etc. were found.

By the sixth century BC the Northern Black Polished Ware (NBPW) had come into use. Houses were now constructed of kiln-burnt bricks, and terracotta ring-wells were used for soakage of refuse-water. Copper was supplemented by iron, and a system of coinage (punch-marked and cast copper coins) came into being.

Thereafter, the site came successively under the sway of the rulers of Mathura in the second century BC, the Yaudheyas in the first century AD and the Kushans in the second-third centuries AD. The pottery now used was dull red, with a variety of stamped designs. Among other objects, particular interest attaches to the excellently-moulded terracotta figurines in the Sunga style from the early levels of this period.

The excavation could not be completed, and thus it is not possible to say how much later than the Kushan period the site continued under occupation.

The 1969–70 Excavations**

The Exploration Wing of the Survey undertook an excavation at Purana Qila, traditionally believed to represent the site of ancient Indraprastha, associated

*Excerpted from *Indian Archaeology: A Review*, 1954–5, pp. 13–14.

**Excerpted from *Indian Archaeology: A Review*, 1969–70, pp. 4–6.

with the Pandavas in the *Mahabharata.* The work was directed by Sarvashri B. B. Lal, B.K. Thapar and M.C. Joshi, with assistance from Sarvashri S. Banerjee, N.C. Ghosh, J. S. Nigam, B. M. Pande, K.S. Ramachandran and W. H. Siddiqi.

In 1955, trial trenches at three points in the lower levels of the mound had indicated that the earliest settlement here might have begun around 1000 BC. The trial dig had also revealed structures of the Sunga and Kushan periods. Consistent with the scope of the work, the evidence was of a restricted kind. Besides the impartation of field-training to the students of the School of Archaeology, the specific objectives of the present excavation were (a) to obtain the complete sequence of occupation at the site backwards from the period of Humayun (AD 1540–56), and (b) to lay bare sizable portions of the settlement of each period. To realize these objectives, a 30 m. square area along the northern flank of the passage leading to the watergate, about 50 m. south of the Sher Mandal (popularly known as Humayun's Library), was taken up for excavation. This area permitted excavation in a stepped manner, facilitating a clear view of the structures of each successive period.

During this field-season, the excavation, without reaching the natural soil, progressed to a depth of about 9 m. from the surface, where Mauryan levels (*circa* third century BC) were encountered. From the Mauryan levels upwards, the sequence of occupation was found to run through Sunga, Kushan, Gupta, post-Gupta, Rajput and Delhi Sultanate Periods to the Mughal.

The Mauryan Period was characterized by the occurrence of: (i) mud-floors; (ii) NBPW (iii) grey terracotta figurines, both human and animal; (iv) an uninscribed cast copper coin, and (v) a clay sealing bearing such motifs as arched hill, tree and a hollow cross.

The Sunga Period was marked by the presence of: (i) the remains of rubble structures belonging to two distinct phases; (ii) typical miniature bowl with incurved rim; (iii) terracotta plaques, depicting *mithuna,* standing female deity under foliage, and Lakshmi, along with a few moulds representing female figures; (iv) bone points; (v) various types of beads; and (vi) two terracotta sealings reading *dhamagiri* and *katakara* (?). Sherds of the N.B.P. were also found in the late levels of this period.

The Saka-Kushan Period was distinguished by the structural remains of baked bricks (size: 37 × 22 × 5 cm). In one of the houses, remains of a flight of steps were also found. The pottery, which mainly consisted of a red-ware of medium fabric, showed some interesting decorative designs consisting of spirals, *srivatsa, svastika* and fish symbols. Among the forms, Kushan bowls and sprinklers were present throughout the deposit. Other important finds of the period comprised: (i) copper coins of Mathura kings, Kushans and Yaudheyas; (ii) bone dice of various types; (iii) terracotta plaques and figurines showing deities and animals, a small *yaksha* (Kubera) figure prepared out of a double-

mould, a turbaned head with moustache and bearing on the forehead the mark of *urna*, and a damaged plaque depicting a divinity holding a bunch of grapes.

The Gupta Period was represented principally by the remains of brick structures showing three to four structural phases. A noteworthy structural feature of the period was the change in the orientation of the houses, which, however, were constructed out of the re-used bricks of the earlier period. Amongst the notable finds mention may be made of: (i) moulded pottery, including a lid bearing the representation of *kinnara* ; (ii) damaged terracotta female figurine; and (iii) three terracotta seals, bearing the outline of a conch above and a legend *Gopasya* below, and on the remaining two *jitam-bhagavata* and *Sri traividya*, respectively. The legend in each case was in Gupta Brahmi characters.

The Post-Gupta Period was marked by the presence of a few structures, some with sagging walls, made of re-used bricks. The associated pottery was mainly a red ware, in which the knife-edged bowl was a distinctive type.

The Rajput Period was characterized by structures built of re-used bricks as also of mud bricks. One of the house-walls showed alternate courses of baked and mud bricks. Mud-floors with hearths were also encountered in some houses. The most impressive structure of the Period, however, was a fortification-wall belonging perhaps to the time of the Tomars. Built of rubble with a basal width of 1.5 m., it was exposed to a length of over 30 m. Other significant finds of the period included: (i) copper coins of the 'bull and horse-man' type; (ii) crude terracotta figurines; (iii) terracotta beads; (iv) a sherd with damaged Nagari inscription; and (v) ornate moulded bricks. The associated pottery was mainly of red and black wares, occasionally decorated with simple painted, stamped or incised designs—the knuckle design, being a common feature on the rims of the vases.

The Sultanate Period was represented by houses of re-used bricks, built over the débris of earlier structures. Some of the houses were found to be built of partly-dressed rubble. A significant feature of the period was the use of the glazed ware, both of sandy friable as also of normal texture. Coins of Balban and Firuz Shah Tughluq were also obtained from the associated strata.

The Mughal Period was represented principally by a huge-pit cut into the deposits of the Sultanate and earlier periods, and a few structures of dressed-rubble built in a different alignment. The distinctive ceramics of the period included: (i) glazed ware; (ii) a *deluxe* egg-shell thin ware with elaborately decorated exterior; (iii) the Chinese Celadon Ware; and (iv) the Chinese porcelain. Some of the bowls of the last-mentioned ware bore painted inscriptions 'made under the Great Ming Dynasty in the Cheng Hua Era' (AD 1465–87). Another epigraph recorded a fairy tale in verse. This ware was possibly a treasured possession, for quite a few fragments bear evidence of their being joined by means of iron rivets. Of the other finds, mention may be

made of: (i) coins of Adil Shah Sur and Shah Alam; (ii) glass wine-bottles with amphalos bases; (iii) a gold ear-ornament studded with emerald and pearls; (iv) shell and glass bangles; (v) beads of semi-precious stones; (vi) a *surahi* decorated with cypress designs on the exterior; and (vii) other household objects of daily use....

The 1970–71 Excavations*

The Explorations Wing of the Survey resumed the excavation at Purana Qila for the second season. The work, as in the previous season, was directed jointly by Sarvashri B. B. Lal, B. K. Thapar and M. C. Joshi, assisted by Sarvashri K. S. Ramachandran, W. H. Siddiqi, J. S. Nigam, N. C. Ghosh, B. M. Pande and S. Banerjee. Besides the imparting of field training to the students of the School of Archaeology, this season's work had two objectives in view: (i) to expose the pre-Mauryan strata including the regular horizon of the Painted Grey Ware; and (ii) to lay bare larger areas of the already exposed cultural phases.

The excavation not only confirmed the cultural sequence (from the Mauryan to the Mughal Period) obtained during the previous season but also brought to light interesting data about each successive period. Trial digs at three different areas of the site failed to yield the regular cultural horizon of the Painted Grey Ware. Nevertheless, the occurrence of some sherds of this ware, some of them used as hopscotches, did indicate that the regular deposits of this Ware must have existed hereabouts.

The Mauryan Period was marked by the use of the NBPW. In the area under excavation, the deposits of this period were found to overlie the natural soil. The structural remains were represented by (i) a series of hearths and a burnt daub-and-wattle structure, (ii) drains of baked bricks of both rectangular (size: 44 × 22 × 6 and 50 × 25 × 7 cm) and wedge-shaped variety (size: 45 × 30 and 17 × 7 cm), the latter perhaps intended to be used originally for the construction of a well or a similar circular structure, and (iii) houses of mud-bricks (size: 25 × 20 × 6 cm). A significant feature of the period was the occurrence of terracotta ring-wells, 75 cm in diameter. The technique of sinking these ring-wells seems to have been as follows: an oblong pit with a narrow rounded-end was dug to the required depth; the terracotta rings were thereafter fitted one above the other towards the rounded end by a workman standing in the remaining part of the pit; after the completion of the ring-well, the pit was filled up to the brim.

Other finds of the period comprised (i) a fragment of a sculptured ring-stone associated with the mother goddess; (ii) terracotta human and animal

*Excerpted from *Indian Archaeology: A Review*, 1970–71, pp. 8, 10–11.

figurines; (iii) a horse-rider wearing armour; (iv) a terracotta seal reading *Seyankarasa* and another *Svati* (?) *rakhitasa*; (v) a dish of the N.B.P. Ware, showing a stamped figure of an elephant on the inner base; and (vi) small rings and disc of banded agate.

The Sunga Period was represented by three structural phases, of which structures of the first two were built of quartzite rubble, set in mud mortar, and those of the third were of mud-bricks (size: 50 × 26 × 6 cm). On one of the walls of the last-mentioned category, a patch of burnt mud plaster, indicative of burning of the structure, was also found. The floors were made of rammed earth, occasionally flagged with mud bricks. The area of two of the rooms, which were fully exposed, was 2.40 m sq. and 2.50 × 2.25 m. The width of a doorway was also available at yet another point.

Amongst the notable finds of this period mention may be made of: (i) a small spouted anthropomorphic pot; (ii) a large number of terracotta plaques showing *yakshas, yakshis, devis, mithunas* and a female lute-player besides animal figurines; (iii) beads; (iv) bone points; and (v) a seal and several sealings in Brahmi script, some of which read *Patithakasa, Svatigutasa, Usasenasa, Thiyasa,* etc. The last one may be a transliteration of the Greek name Theos. A peculiar sealing, of which four specimens were found, bore only one Brahmi letter *pe* and four symbols.

The Saka-Kushan Period was distinguished by the remains of regularly-built structures of baked bricks. Evidence of the use of mud-bricks was not wanting. The size of two rooms, which could be exposed fully, was 1.80 × 1.80 m and the width of doorways was 75 cm. Traces of a brick-paved floor were also noticed inside a house. The size of most of the baked bricks was the same as reported last year, the only variation being 38 × 23 × 5 cm or 37 × 27 × 5 cm. The associated finds of the period included (i) sherds of stamped pottery; (ii) fragments of a votive tank; (iii) skin rubbers; (iv) terracotta figurines including an impressive human head wearing a decorated cap; (v) a plaque showing three elephant-riders; (vi) a small piece of an ivory handle; (vii) crucibles; and (vii) a few copper coins of the Kushans and the Yaudheyas.

The Gupta Period was represented by structural remains built of baked bricks robbed from the houses of the preceding period. Of such remains, the most remarkable was a structure showing three to four phases of construction. Initially, the building was oblong on plan with a partition wall. Subsequently, a verandah or a room with a rounded quoin was added to the front. In the third phase, floor-levels were raised, steps were provided and two longitudinal partition-walls were erected inside. A brick pedestal (height 60 cm) with a stepped base was built against the wall on one side of the entrance. The exact purpose of the pedestal, however, could not be ascertained. During the last phase, a new verandah was added on the front side, earlier floor-levels were considerably

raised and steps were added. Below the debris of the last phase were found a sealing in the Gupta Brahmi and a gold-plated coin of the archer type with *Sri Vikrama* legend on the reverse. The coin may belong to any of the later rulers of the main line of the Imperial Guptas. Other antiquities of the period included (i) a few terracotta human figurines; (ii) a broken shell bangle with decorative carving; (iii) a small, damaged *mukha-linga* in Mathura sandstone; (iv) moulded and painted pots; and (v) sealings reading *Sri Makarasya, Sri Aryyavama* (?) with a Sassanian fire altar above and *Sri Gudhadasah* bearing a set of foot-prints above.

The Post-Gupta Period was marked mainly by structural remains in baked or mud bricks showing three phases. The baked bricks used in the structures had mostly been robbed from houses of the earlier periods. The size of mud bricks was 30 × 24 × 4 cm. An interesting feature of the structures was the presence of various types of ovens, some resembling modern *tandoors*. Amongst noteworthy objects, mention may be made of a few decorated potsherds including a *pranala* type spout, fragments of terracotta figurines, beads, and a fine but damaged stone sculpture.

The Rajput Period was represented by five structural phases, one of them showing floors with ovens. The principal building material was the same as in the preceding period, with the addition of rubble. The stone enclosure or the fortification-wall, exposed in the earlier field season, was found to be very badly damaged on the east. Other important finds of the period included a lipped jug, containing bells, *ghunghrus* and other objects of copper, besides pieces of coral and a crystal, and a carnelian bead, high-necked jars resembling *surahi*, shallow dishes, a few fragments of carved stone tablets, and a small figure of Vishnu in stone.

Of the Sultanate and Mughal Periods no structures could be encountered in the area under excavation. However, some interesting finds belonging to these periods included: sherds of glazed ware; animal and human terracotta figurines; earthen lamps; a few pieces of Chinese porcelain of the Ming Period; and a few coins, including that of Muhammad Tughluq (AD 1392–1412)....

Painted Grey Ware Period*

The Early levels at Purana Qila: A synthesis

Although during the earlier work and during the later four seasons, a number of points at the site were tapped and serious efforts were made to lay bare the pre-NBPW horizon of Painted Grey Ware culture which was occasionally

*Excerpted from B.R. Mani, Delhi: *Threshold of the Orient* (*Studies in Archaeological Excavations*), Aryan Books International, New Delhi, 1997, pp. 35–7.

found, but separate picture of it in a clearly stratified position could not emerge. Tentatively it was believed that the earliest settlement here might have begun around 1000 BC. 'Trial digs at three different areas of the site failed to yield the regular cultural horizon of the Painted Grey Ware. Nevertheless, the occurrence of some sherds of this ware, some of them used as hopscotches, did indicate that the regular deposits of the ware must have existed hereabouts.'[1] There is also a possibility of an overlap in the earliest levels of Painted Grey Ware and NBPW as indicated by the occurrence of a few fine and thin grey ware sherds, closely affiliated to the Painted Grey Ware along with a fragment of an offering stand in red ware in the levels associated with the NBPW in one of the trenches excavated in the season 1971–72. This may provide a late date of the beginning of the settlement as well as of the Painted Grey Ware at the site.

Northern Black Painted Ware Period

Northern Black Painted Ware levels were encountered during the first season at the depth of about 9 m from the surface indicating the deposits of Mauryan period, characterized by the occurrence of mud floors. Northern Black Painted Ware, grey terracotta human and animal figurines, an uninscribed copper cast coin and a clay sealing bearing motifs of arched hill, tree and a hollow cross.

During the first season the natural soil was not encountered, but in the second season the Mauryan levels were found to overlie the natural soil. Structural remains containing a series of hearths and a rectangular burnt wattle-and-daub structure, drains of baked bricks of both rectangular (44 × 22 × 6 cm and 50 × 25 × 7 cm) and wedge-shaped variety (45 × 30 and 17 × 7 cm), the latter intended to be used for some circular structure or well and houses of mud bricks (25 × 20 × 6 cm) were found. 'A significant feature of the period was the occurrence of terracotta ring wells, 75 cm in diameter. The technique of sinking these ring wells seems to have been as follows: an oblong pit with a narrow rounded end was dug to the required depth; the terracotta rings were thereafter fitted one above the other towards the rounded end by a workman standing in the remaining part of the pit; after the completion of the ring-well, the pit was filled up to the brim. Sanskrit term to the ring well is *gandakusūla.*

Interesting finds of the NBPW deposits of the Mauryan period include a fragment of a sculptured ring-stone associated with the mother-goddess, terracotta human and animal figurines, a horse-rider wearing armour, a terracotta seal reading *Seyankarasa* and another *Svati* (?) *rakhitasa,* a dish of the NBPW showing a stamped figure of an elephant on the inner base, small rings and disc of agate, an undeciphered circular seal with early *Brāhmi* characters and a sealing with the legend *Ayadinasa* in early *Brahmi* characters.

Sunga Period

The Sunga period was characterized by the presence of three distinct structural phases, of which structures of the first two were built of quartzite rubble, set in mud mortar, and those of the third were of mud bricks (50 × 26 × 6 cm). A patch of burnt mud plaster on one of the walls of the third phase of structures indicated the burning of it. The floors were found to have been made of rammed earth, occasionally flagged with mud-bricks. Two rooms of the size of 2.40 × 2.40 m and 2.50 × 2.25 m were fully exposed. At one point a doorway was also located.

The notable finds of Sunga period include typical miniature bowl with incurred rim, large number of terracotta plaques depicting *mithunas*, a standing female deity under foliage, Lakshmi, yakshas and yakshis, a female lute player, a small spouted anthropomorphic pot, a terracotta figurine of a nude and headless standing male in Greek style holding some indistinct object in the right hand, terracotta animal figurines, a few moulds representing female figurines, bone points, various types of beads, terracotta sealings with legends *Dhamagiri, Katakara,* terracotta seals and sealings with legends *Patithakasa, Svatigutasa*, *Usasenasa* and *Thiyasa*, the last of which might have been a transliteration of the Greek name Theos, a peculiar sealing, of which four specimens were found, bearing only one *Brāhmī* letter *Pe* with four symbols. Interestingly, sherds of NBPW were also found in the late levels of this period.

Saka-Kushan Period

The Saka-Kushan period at the site was represented by the remains of regularly-built structures of baked bricks. Size of bricks was 37 × 22 × 5 cm. Some variations in the size of brick were also noticed as 37 × 27 × 5 cm or 38 × 23 × 5 cm. Remains of flight of steps were also found in one of the houses. Evidence of the use of mud-bricks was not wanting. Two rooms were exposed fully, having the size of 1.80 × 1.80 m. Width of their doorways was 75 cm. Inside a house, traces of a brick-paved floor were also found. Ceramic industry of the period includes typical Kushan bowls and sprinklers. Red ware of medium fabric was the main pottery which also included decorative designs consisting of spirals, *śrīvatsa, svastika* and fish motifs including stamped decorative designs. Other important finds of the period comprised copper coins of Mathura kings, Kushans and Yaudheyas, terracotta plaques and figurines showing deities and animals including an impressive human head wearing a decorated cap, a small yaksha (Kubera) figure made out of a double mould, a turbaned head with moustache and bearing on the forehead the mark of *ūrnā* a damaged plaque depicting a divinity holding a bunch of grapes and a plaque showing three elephant-riders,

fragments of a terracotta votive tank, terracotta skin rubbers, a small piece of an ivory handle, crucibles, bone dice of various types. Fragment of a red sandstone *sūchī* or crossbar with lotus medallions on each face belonging to some Kushan railing was found in the levels of Mughal period but indicated the existence of some Kushan religious structure at the site.

Notes and References

1. *Indian Archaeology: A Review*, 1970–1, p. 8.

The Building of the Assembly Hall

TRANSLATED BY J.A.B. VAN BUITENEN

Vaiśaṃpāyana said:

THEN MAYA, IN THE PRESENCE OF VĀSUDEVA, SPOKE TO THE PĀRTHA, FOLDING HIS hands, with flattering speech and after many compliments: 'You have saved me from the angry Kṛṣṇa and the willing fire that was ready to burn me, son of Kunti. Tell me what I can do for you.'

Arjuna said:

You have done everything. Farewell, depart, great Asura. Be always friendly to us, and we shall be friendly to you.

Maya said:

My lord, that is spoken like you, bull among men! But I do wish to do something in friendship, O Bhārata. For I am a great artist, a Viśvakarman among the Dānavas, and I wish to make something for you, Pāṇḍava.

Arjuna said:

You think that I saved you from deadly peril. Albeit so, I cannot let you make anything. But neither do I wish to frustrate your design, Dānava. Do something for Kṛṣṇa; that will be reward enough for me.

Vaiśaṃpāyana said:

Maya urged Vāsudeva, O bull of the Bharatas, and he pondered a while on what he would demand. Then Kṛṣṇa commanded him, 'Build an assembly hall, Daitya, such as you deem worthy of the King Dharma. Build a hall of such magnificence that people in the entire world of men will be unable to imitate it, when they have beheld it in wonderment. Build an assembly hall, Maya, where we will see the designs of the Gods laid out by you, and the plans of Asuras and men.' On receiving this reply, Maya was delighted; and he joyfully agreed

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to build an assembly hall for the Pāṇḍavas, which would resemble a palatial chariot of the Gods.

Thereupon Kṛṣṇa and the Pārtha related all that had happened to Yudhiṣṭhira the King Dharma and presented Maya to him. Yudhiṣṭhira showed him appropriate honor, and Maya courteously accepted the courtesies. The Daitya narrated then to the sons of Pāṇḍu the feats of the ancient Gods in various places, O Bhārata, lord of the people. After he had rested for some time, this Viśvakarman did the planning and began the building of an assembly hall for the great-spirited sons of Pāṇḍu. At the wishes of the Pārthas and the great-spirited Kṛṣṇa, the august and mighty Asura performed the inauguration on an auspicious day, fed eminent brahmins by the thousands rice boiled in sugared milk, distributed many presents to them, and measured out a terrain of ten thousand cubits, divinely beautiful, which possessed the virtues of all seasons.

Vaiśaṃpayana said:
After Janārdana (Krishna) had lived happily in the Khāṇḍava Tract, honored to his deserts by the affectionate Pārthas, he became desirous of seeing his father and set his mind on going. The large-eyed hero bade the King Dharma and Pṛthā (Kunti) farewell, and he who is worshipful to the world worshiped with his head the feet of his father's sister (Kunti). She kissed Keśava on the head and embraced him. Thereafter famous Hṛṣīkeśa went to see his sister and shed a tear of affection. The blessed Lord gave the gentle and gentle-spoken Subhadrā meaningful, apt, helpful, brief, appropriate, and excellent advice, and she gave him messages for her family and honored and greeted him with many bows. After he had taken leave of the radiant Subhadrā and bid her good-bye, Janārdana went to see Kṛṣṇā and Dhaumya. Janārdana, greatest of men, saluted Dhaumya ceremonially, comforted Draupadi, and bade her farewell. Then the wise and strong hero, accompanied by the Pārtha, went up to the brothers; surrounded by the five brothers, Kṛṣṇa stood like Indra surrounded by the Immortals. The bull of the Yadus worshiped the Gods and the brahmins with garlands, blessings, bows, and perfumes of many kinds.

After performing all his tasks, he, first of the steadfast, set out and distributed to those brahmins who were worthy of benedictions presents accompanied with bowls of curd and unhusked rice, and circumambulated them. He ascended his swift golden chariot, which bore the emblem of Garuḍa and carried his club, discus, sword, and other arms. The day, the stars, and the hour were propitious when the lotus-eyed hero drove out with his horses Sainya and Sugrīva. From affection King Yudhiṣṭhira ascended after him and, moving aside the driver Dāruka, ablest of charioteers, the lord of the Kurus himself took the reins. Arjuna too mounted on the chariot and waved a large white yak-tail fan with a golden staff sanwise around Kṛṣṇa's head. The masterful Bhimasena,

too, and the twins followed Kṛṣṇa, surrounded by priests and townspeople. Keśava, killer of enemy heroes, as he was followed by the brethren shone like a guru amidst his beloved disciples. Govinda bade the sorrowful Pārtha farewell and embraced him, then saluted Yudhiṣṭhira, Bhīmasena, and the twins. The twins clasped him hard with their arms in farewell. After making covenant with the Pāṇḍavas and turning them and their followers back, Kṛṣṇa departed for his own city like another Sacker of Cities (Indra). They followed Kṛṣṇa with their eyes as far as the horizon, then followed him in their thoughts with love. While their hearts were still unsated of the sight of Keśava, the gracious Śauri soon disappeared from their eyes. Listlessly the Pārthas, whose thoughts had gone with Govinda, all turned back and the bull-like men returned to their city while Kṛṣṇa on his chariot in time reached Dvārakā.

Vaiśaṃpāyana said:

Then Maya said to Arjuna Pārtha, greatest of conquerors, 'I say good-bye, I must go, but I shall return soon. North of the Kailāsa Plateau, by Mount Maināka, close to the delightful Lake Bindu, where all the Dānavas are to hold their sacrifices, I have made a collection of precious stones, which has remained in the assembly hall of Vṛṣaparvan, who kept faith with his promises. I shall go and fetch it, if it is still there, Bhārata. With it I shall build a hall for the famous Pāṇḍava, a beautiful hall to delight all hearts, adorned with all manner of gems. In Lake Bindu there is a superb club, O scion of Kuru, which was placed there by King Yauvanāśva, after he had defeated his enemies in war. It is heavy and embellished with golden eyes, hard and able to withstand great weight and to kill all enemies; it is equal to a hundred thousand. It would be a fitting weapon for Bhimasena, as the Gāṇḍiva bow is for you. There is also a large conch with an excellent sound, which came from Varuṇa, Devadatta by name. I shall give you all this, let there be no doubt.'

After he had thus spoken to the Pārtha, the Asura departed in a northeasterly direction. North of the Kailāsa, toward Mount Maināka, there is a sacred mountain with great minerals, Hiraṇyaśṛnga, and lovely Lake Bindu, where King Bhagiratha dwelled many years watching the River Ganges, which is since known as Bhāgirathi. It was there that the great-spirited lord of all creatures offered up a hundred great sacrifices, O best of the Bharatas, and gem-encrusted sacrificial poles and golden altars have been set up there, for beauty's sake, not to set an example. After offering there, the thousands-eyed Consort of Śaci (Shiva) attained to success. It is there that the eternal lord of the creatures, after having created all the worlds, has been worshiped in his fierce splendor amidst thousands of beings. There, too, Nara and Nārāyaṇa, Brahmā, Yama, and Sthāṇu (Shiva), in the fifth place, attend a sacrificial Session every one thousand eons. There Vāsudeva always faithfully sacrifices with thousand-year sessions, for the

instruction of the learned. There Keśava donated thousands and tens of thousands of golden-garlanded sacrificial pillars and most splendid altars.

Arriving there, Maya took the club and the conch shell, Bhārata, and the crystal building materials for the hall that were with Vṛṣaparvan; he fetched all this with the aid of the Kiṃkara Rākṣasas. The Asura brought everything back and built a peerless hall, celestial, beautiful, studded with precious stones, which became famous in the three worlds. He gave the superb club to Bhīmasena and the matchless conch Devadatta to the Pārtha.

The hall, which had solid golden pillars, great king, measured ten thousand cubits in circumference. Radiant and divine, it had a superb color like the fire, or the sun, or the moon. Challenging as it were with its splendor the luminous splendor of the sun, it shone divinely forth, as though on fire, with divine effulgence. It stood covering the sky like a mountain or monsoon cloud, long, wide, smooth, faultless, and dispelled fatigue. Made with the best materials, garlanded with gem-encrusted walls, filled with precious stones and treasures, it was built well by that Viśvakarman. Neither the Sudharmā hall of the Dāśārhas (Kṛṣṇa's people), nor the palace of Brahmā possessed the matchless beauty that Maya imparted to it.

Eight thousand armed Rākśasas, who were called Kiṃkaras, sky-going, terrifying, gigantic, powerful, red-eyed and yellow-eyed, with ears of mother-of-pearl, guarded and protected the hall at Maya's behest. Inside the hall Maya built a peerless lotus pond, covered with beryl leaves and lotuses with gem-studded stalks, filled with lilies and water plants and inhabited by many flocks of fowl. Blossoming lotuses embellished it, and turtles and fishes adorned it. Step descended gently into it; the water was not muddy and it was plentiful in all seasons; and the pearl-drip flowers that covered it were stirred by a breeze. Some kings who came there and saw it thick with precious stones and gems did not recognize it for a pond and fell into it. Around the hall stood tall trees that were always in bloom, lovely trees of many kinds that were dark and threw cool shade. Everywhere there were fragrant groves and lotus ponds made beautiful by wild geese, ducks, and *cakra* birds. The wind carried the fragrance of flowers on land or on water and fanned the Pāṇḍavas with it., Such was the palace that Maya built in fourteen months, and when it was finished, he informed the King Dharma.

Vaiśaṃpāyana said:
Thereupon King Yudhiṣṭhira made his entrance into the hall, and the lord of men fed ten thousand brahmins with rice boiled in sugared milk, clarified butter, delicious honey, roots and fruit, and gave them new clothes and many kinds of garlands. The king gave each of them a thousand cows, and the sounds of the Blessing of the Day seemed to touch heaven, O Bhārata. When the chief

of the Kurus had paid worship to the deities with music, many songs, and various perfumes, and had settled in, wrestlers, dancers, boxers, bards, and songsters waited on the great-spirited Yudhiṣṭhira for seven nights. When he had thus paid homage to the hall, the Pāṇḍava disported himself in his lovely palace with his brothers, like Indra in his heaven.

In that hall seers and princes from many countries sat with the Pāṇḍavas—Asita Devala, Satya, Sarpamālin, Mahāśiras, Arvāvasu, Sumitra, Maitreya, Śunaka, Bali, Baka Dālbhya, Sthūlaśiras, Kṛṣṇa Dvaipāyana, and we ourselves, Vyāsa's students: Śuka, Sumantu, and Jaimini. Then there were Tittira, Yājñavalkya, Lomaharṣaṇa and his son, Apsuhomya, Māṇḍavya-with-the-Stake, Kauśika, Dāmoṣṇīsa. Traivaṇi, Parṇāda, Ghaṭajānuka, Mauñjāyana, Vāyubhakṣa, Pārāśarya, the two Sārikas, Balavāka, Śinīvāka, Sutyapāla, Kṛtaśrama, Jātukarṇa, Śikhāvat, Subala, Pārijātaka, the lordly Parvata and the hermit Mārkaṇḍeya, Pavitrapāṇi, Sāvarṇi, Bhāluki, Gālava, Janghabandhu, Raibhya, Kopavegaśravas, Bhṛgu, Haribabhru, Kauṇḍinya, Babhrumālin, Sanātana, Kakṣīvat, Auśija, Nāciketas, Gautama, Painga, Varāha, Śunaka, Śāṇḍilya the great ascetic, Karkara, Veṇujangha, Kalāpa, and Kaṭha—these and many other hermits, firm in Law, masters of soul and senses, learned in the Vedas and their branches, eminent seers, attended on the great-spirited king in his assembly hall, wise in the law, pure and immaculate, and narrated auspicious tales.

Likewise the best of the barons attended on King Dharma, such as the majestic, great-spirited, law-spirited, prospering Muñjakeru, Saṃgrāmajit, Durmukha, the powerful Ugrasena, Kakṣasena, lord of his country, the unvanquished Kṣemaka, King Kamala of Kamboja, and the mighty Kampana, who by himself continued to terrify the Greeks, as the Thunderbolt-wielder terrifies the Kālakeya Asuras;

And Jaṭāsura, the king loved by the Madras,
Kunti and Kuṇinda king of Kirātas,
Anga and Vanga and king of Puṇḍra,
The Pāṇḍya, Udrāja, and Andhraka;

Sumanas, king of Kirātas, Cāṇūra, overlord of the Greeks, Devarāta, Bhoja and Bhīmaratha; Śrutāyudha of Kalinga, Jayatsena of Magadha, Suśarman, Cekitāna, and enemy-plougher Suratha, Ketumat and Kṛtakṣaṇa of Videha, Sudharman, Aniruddha, and powerful Śrutāyus, Anūparāja the unassailable, Kṣemajit of the rich stipends, Śiśupāla and his son, and the sovereign of the Karūṣas, and the godlike unassailable princes of the Vṛṣṇis—Āhuka, Vipṛthu, Gada, Sāraṇa, Akrūra, Kṛtavarman and Sātyaki son of Sini; Bhīṣmaka, Āhṛti, the mighty Dyumatsena; the great archers the Kekayas; Yājñasena of the Somakes; all the heroic princes who had chosen for Arjuna, learning from

him the science of archery while clad in deer and antelope skins; and the scion of the Vṛṣṇis; and the princes who had been taught in the same school—Rukmini's son, and Sāmba, and Yuyudhāna Sātyaki. These and many other princes, O king of the earth, were there. Dhānaṃjaya's perpetual friend Tumbura always sat there, and Citrasena with his councillors, Gandharvas and Apsarās, clever in songs and music-making, skilled in the beat of cymbals, and Kimnaras, students of measures and rhythms—all these Gandharvas were exhorted by Tumbura and sang in unison. These experts sang to celestial tunes according to the rules of music and entertainingly waited on Pāṇḍu's sons, these seers, strict in their vows and true to their promises, and waited on Yudhiṣṭhira in his hall as the Gods wait on Brahmā in heaven.

Indian Archaeology and the Epic Traditions

B.D. Chattopadhyaya

Archaeological work on sites mentioned in the epics is not new. While a number of them were covered in the surveys of Alexander Cunningham,[1] more recently two such sites, Takṣaśilā and Ahicchatra, have been excavated with a high level of stratigraphic precision.[2] What is, however, new is an effort to correlate archaeology with the epic evidence and to reconstruct the epic milieu in the light of archaeology. The present essay aims to review the work already done as also the work proposed to be done in this direction, with an initial reference to the *Rāmāyaṇa* tradition. It will, in the process, examine the assumptions which have led to the highlighting of epic tradition in the context of archaeology and attempt a purely personal assessment of what contributions such assumptions are likely to make towards the progress of Indian archaeology.

Perhaps the first work in the way of correlating epic tradition with the archaeology of north India was by B.B. Lal who explored a number of sites mentioned in the *Mahābhārata,* excavated an important '*Mahābhārata*'[3] site,[4] and initiated digging at Purana Qila, the site which is believed, by tradition, to represent Indraprastha of the *Mahābhārata.* Talk about the archaeology of the *Rāmāyaṇa* is more recent. H.D. Sankalia who made a brief exploration of Ayodhyā and collected PGW sherds there seems to be of the opinion that an excavation at the site is likely to shed considerable light on the *Rāmāyaṇa* mystery.[5] A more comprehensive justification is worked out by B.B. Lal[6] who has already completed the first season's excavation at Ayodhyā.[7]

Both these pleas and what else has been mentioned above imply an archaeology of the epics. Let us try to grasp its meaning in relation to the *Ramayana* to begin with. What Sankalia attempts broadly is to indicate the archaeological range which can correspond to the growth history of an original *Rāmākathā,*

Excerpted from Brajadulal Chattopadhyaya, *Studying Early India: Archaeology, Texts, and Historical Times*, Permanent Black, New Delhi, pp. 29–38; reprinted from *Puratattva*, no. 8 (1975–6), pp. 67–72.

apart, of course, from an analysis of the internal evidence. Archaeologically, the final dates are suggested to him by the description of such cities as Ayodhyā, Kiṣkindhā and Laṅkā 'which were built between the Kuṣāṇa and Gupta periods' (alternatively, he suggests a third-fourth century BC date for the descriptions of Ayodhayā).[8] While the time span which the descriptions of the *Rāmāyaṇa* sites can cover is thus as broad as eight hundred years, the position with the early stratum of the *Rāmākathā* is no better. One item in the cultural equipment of this stratum, namely, weapons, is taken to indicate the Iron Age, suggesting 800 BC as the earliest possible date.[9] If one were to draw comparisons with Homer's allusion to an already lost Mycenaean civilization,[10] reference to iron weapons may have been a case of transferred value—from bronze to iron—in an age which had grown used to iron. And indeed Sankalia thinks also in terms of the foundation of Ayodhyā 'about 1500 BC or latest 1000 BC'.[11]

The position would really not be simple even if one were to assume that the core of the *Rāmākathā* related to the Iron Age. In terms of the archaeology of the Gaṅgā valley this may imply, although it has not been clearly spelt out by Sankalia, the period of the PG ware culture or that of the NBP ware. Sankalia's ingenious finding that the earliest stratum of the *Rāmāyaṇa* portrays an Ayodhyā in which the houses were made of mud[12] does not help because burnt brick houses did not come to be constructed on a large scale in this region before about the second century BC anyway.[13] And the least one can hope for in the proto-historic sites of the area is the evidence of single culture occupation which may recognizably correspond to any of the layers of the *Rāmāyaṇa*.

What also has been totally ignored by the advocates *of Rāmāyaṇa* archaeology is the total spatial dimension of cultures. If one accepts the findings of D.R. Chanana's research—of which incidentally neither Sankalia nor Lal seems to be aware—the '*Rāmāyaṇa* society' incorporates two types of cultures, one tribal, represented by that of the *vānaras* and *rākṣasas* and the other agrarian, that of the kingdom of Kośala.[14] This differentiation on the basis of the traits available in the *Rāmāyaṇa* should have helped not only to recognize the nature of the additions made subsequently to the traits (such as the account of the city of Laṅkā which will have no archaeological correspondence, if it is supposed that the *rākṣasa* society represents a tribal stage of culture, a supposition subscribed to by Sankalia too in his characterization of Rāvaṇa as a Gond chief),[15] but should have had several archaeological implications as well. First, it will have involved a search for an archaeological correspondence to the geographical distribution of two types of cultures, assuming of course, that the original stratum of the *Rāmāyaṇa* did in fact represent these two types. The archaeology of the *Rāmāyaṇa* would in such a case not simply have covered a few select sites of the *Rāmāyaṇa* but would have demanded a study of the relationship in which the archaeology of Uttar Pradesh and northern Bihar

stood with reference to the regions in which the *rākṣasas* and the *vānaras* may be supposed to have been located. And all these suppositions in an apparent chronological void would have indicated the kind of problems a not-too-comprehensive coverage of *Rāmāyaṇa* archaeology was likely to confront.

The spread of settled agriculture is a part of the problem of Indian archaeology in general, but the relative advance made in different periods is supposed to be indicated in the two epics—an indication which, if it were dependable, would have led to important assumptions regarding the chronology of the completion of the two epics.[16] Archaeologists like B.B. Lal have already speculated upon their relative chronology from a different respective, partly on the basis of an already worked out literary synchronism and partly on the basis of an attempted correlation between archeology and the evidence of local tradition. Basing himself on the synchronism worked out by H.C. Raychaudhuri who, on the strength of a passage in the *Bṛhadāraṇyaka Upaniṣad*, showed Janaka to be later than Parikshit and possibly contemporaneous with Nicakṣu,[17] Lal remarks,[18] although with some reservations.

It may incidentally be recalled here that it was in the time of Nichakshu that Hastināpura was washed away by the Gaṅgā and the capital was shifted to Kauśāmbi where a developed form of the Painted Grey Ware has been encountered at the lower levels.

Lal seems to be little aware that he contradicts himself in the next paragraph by depending on a local tradition at a '*Rāmāyaṇa*' site, which identifies the harpoons of the Copper Hoard complex as arrows of Lava and Kuśa, thus favouring the claim of the Copper Hoard culture as being that of the *Rāmāyaṇa*.[19] As Lal himself associated the Copper Hoard culture with the OCP on the basis of circumstantial evidence,[20] the contradiction involved here in believing the *Rāmāyaṇa* to represent both a late phase of the PGW and the Copper Hoard culture is obvious. It is not at all being suggested here that the *Rāmāyaṇa* cannot cover the time span of two cultures, but then such an admission would clearly recognize the difficulty of approaching the 'archaeology' of the epic sites in terms of any ill-founded assumptions regarding their relative chronology.

Let us probe this point about relative chronology a little further in literary and archaeological terms. If, as assumed by Sankalia, the *Rāmāyaṇa* does not represent a pre-Iron stage and if, along with the already cited evidence of the *Bṛhadāraṇyaka Upaniṣad*, the story of the colonization of Videha, as narrated in the *Śatapatha Brāhmaṇa*,[21] is considered in this context, then the *Rāmāyaṇa* story and consequently the archaeological sequence at least of northern Bihar would appear to have been later than that of the Kuru-Panchāla region, perhaps the locus of the *Bhārata-Kathā*. A comparative economic study of the two epics, however, does not seem to bear this out; Chanana who made such a study sums up his conclusions in the following words:[22]

... a comparison of these few pockets of cultivation in the valley of the Ganges with the area of cultivation as described in the *Mahābhārata* (taking only those regions of the Ganges valley, which were ruled by the princes belonging to the *Kaurava* and *Pāṇḍava* families) shows us that during an intervening period, cultivation has spread further.

There can in fact be no unanimity regarding the relative chronology of the two epics. Their growth process, spread over a number of centuries, presupposes a considerable degree of overlapping in time, and it may be too much to expect that the chronology of a few 'epic' sites, even after they are correctly ascertained archaeologically, will settle the problem of relative dating. To reiterate a point made earlier, the advocates of the archaeology of the epic sites do not speak of the entire range of places mentioned either in the *Mahābhārata* or in the *Rāmāyaṇa:* the first phase of the five-year project on the archaeology of the *Rāmāyaṇa* sites does not even include Mithilā or Videha in north Bihar.[23] The explanation for the selection of sites may be that the initial focus ought to be on the core sites of the epics, but such an explanation give rise to the problem of another type of selection: the criteria for the selection of literary data for correlation with archaeological evidence.

This perhaps brings in a bigger question of the relative reliability of different categories and strata of literary tradition; one need not go into any details here but point to only what is strictly relevant to the context of the archaeology of the Gaṅgā basin. As a preface to what will be said later on we quote V. Gordon Childe.[24]

... the *Kṣatriya* (i.e., the Epic and Puranic) tradition ... is hardly an unpolluted source of history. The orthodox view is not really based on the priestly tradition, as embodied in epexetical works, but rather on the internal evidence of the Veda itself. The latter carries conviction precisely because the historical and geographical references in the hymns are introduced only incidentally.... The same cannot be said of the *Kṣatriya* tradition, which in its recorded form dates from an age (perhaps as late as AD 200) when mythmaking had had many centuries to work in, and which might serve dynastic ends.

Several other reasons, apart from these general features of the internal evidence of several categories of literary sources, compel one to turn to Vedic rather than epic and Purāṇic data for correlation with archaeological evidence. It is widely admitted now that the stages in the societal evolution of the Gaṅgā basin and its peripheries are indicated in the Vedic tradition[25] and chronologically at least the PGW and NBP Ware phases in the archaeology of this region broadly coincide with the period generally known as the later Vedic.[26] As has been shown by Raychaudhuri, many traditions are common between the Vedic and the epic sources (in fact this is the basis of many synchronisms worked out by him)[27] and while the epics continued to grow, thus making it practically

impossible to isolate their different strata from one another, their early milieu may be believed to have been preserved in the Vedic tradition.

Why the epics and not the Vedic or early Buddhist sources have been the concern of the archaeologists is another matter, but the point just made leads us on to another dimension of the Vedic evidence which is of crucial importance so far as the archaeology of the Gaṅgā basin is concerned. The Vedic texts show an unmistakable shift from tribe to territory,[28] a common enough corollary to the transition to a stratified agrarian economy. Areas of settlements—their names associated with various groups—are mentioned throughout the later Vedic texts, and the list of sixteen *mahājanapadas* as given in the Buddhist *Aṅguttaranikāya*[29] was anticipated in such later Vedic references.[30] The 'epic' sites of the Gaṅgā basin and its peripheries, which have so far been shown to be of archeological potential, are in fact subsumed in these settlement areas or *janapadas* which provide the territorial milieu of the early strata of both the epics. By the sixth century BC different types of settlements such as *grāma, nigama* and *nagara* had emerged within the framework of the *janapadas,*[31] and this literary classification has two important bearings on an analysis of the archaeological data: (i) the archaeological culture of a region ought not to be considered as monolithic; the culture assemblage at rural, commercial or urban sites is likely to have varied considerably, (ii) the process of the formation of *janapadas,* if understood in literary terms alone, implies the evolution of a composite type of culture,[32] and as such it should be considered risky, if not at times totally futile, to single out any particular archaeological cultural trait for correlation with literary evidence. This point may be a little elaborated by reference to the archaeology of the PGW phase at Hastināpur. The PG ware itself has often been understood in terms of the Aryans;[33] the distribution of the PG ware site tallies excellently with that of the Pūru-Bharatas leading to D.D. Kosambi's identification of PGW with 'Pūru-Kuru ceramics'.[34] And yet wheel-made pottery is, so far as the Vedic literary evidence is concerned, post-Ṛgvedic, and in view of its association with the Asuras, probably a non-Aryan craft.[35] Two other cultural traits of this phase, namely rice had an 'eastern cultural bias'.[36]

The point of this rather lengthy digression was to show that traditional evidence—here represented by the evidence of literary texts—and that of archaeology can perhaps meet only at certain point. For the protohistoric cultures of the Gaṅgā basin, neither the genealogical accounts of royal families nor the distribution or movements of individual 'tribal' groups are likely to provide such common meeting grounds. The point may perhaps be reached by undertaking a total structural study of society and the major trends of societal change in terms of both archaeology and literary tradition.

Second, the roots of both the epics in so far as they are embedded in any organized literary material have to be traced in the process of the formation

of the early *janapadas*. Hastināpur and Indraprastha were two important centres of the Kuru *janapada*, Ayodhyā of the *janapada* of Kośala and Mithilā of Videha.[37] The neglect of this type of correlation, beyond which it is perhaps not possible to go at this stage, explains why the PGW has been sought to be understood both in terms of the Aryans and the *Mahābhārata* tradition.[38] The archaeology of the epic sites of the Gaṅgā basin can thus at best be the archaeology of its *janapadas* and nothing more.

We finally come to the examination of the plea for the archaeology of the epics from a different perspective—from the perspective of a 'consumer'[39] to whom such pleas are vitally related to the overall archaeological planning in the country. It is historiographically interesting to note that this plea has emerged over the years from an initially crucial archaeological understanding 'to bridge ... [the] vast gap of nearly twelve centuries'[40] between the Harappan and the early historical cultures. The possibility that what was put forward as a hypothesis might develop into an axiomatic truth in Indian archaeology was foreshadowed by A. Ghosh in his editorial notes on the Hastināpur excavation report.[41]

The following report often refers to the *Mahābhārata* and the place-names mentioned in it and brings into prominence the fact that the Painted Grey ware is found at the sites associated with the story of that epic. Such references are easily understandable and even unavoidable, for was not Hastinapura the focus of the epic-tale? But a word of caution is necessary, lest the impression is left on the unwary reader that the Hastināpura excavation has yielded archaeological evidence about the truth of the story of the *Mahābhārata* and that here at last is the recognition by 'official archaeology' of the truth embodied in Indian traditional literature. Such a conclusion would be unwarranted. Beyond the facts that Hastināpura, the reputed capital of the Kauravas, was found to be occupied by a people whose distinctive ceramics were the Painted Grey ware in a period which might roughly have synchronized with the origin of the nucleus of the *Mahābhārata* story, that this occupation came to an end with a heavy flood and this ware is found at many early sites, some of which are connected, either in literature or by tradition, with the epic heroes, the excavation has no bearing on the authenticity or otherwise of the epic tale. It is indeed tempting to utilize archaeological evidence for substantiating tradition, but the pitfalls in the way should be guarded against, and caution is necessary that fancy does not fly ahead of facts.

And yet the case for the archaeology of the *Rāmāyaṇa* sites is apparently based on the 'success' of the PG ware archaeology in unravelling the *Mahābhārata* mystery. Besides, the arguments given above to show that no particular archaeological phase can correspond to the *Mahabharata* or for that matter *Rāmāyaṇa* times—because the span of 'epic' times can cover several archaeological phases—the backbone of the entire PG ware—*Mahābhārata*

correlation, namely, the confirmation of the Purāṇic flood legend and the legend relating to the transfer of the Kuru capital to Kauśāmbi, may not be as strong as it looks.[42] And what kind of material remains have Hastināpur and Indraprastha revealed to provide points of comparison with the epic evidence? Admittedly, here archaeology can serve as a corrective to the exaggerated accounts of the epics, and the fact that there cannot be any one-to-one correlation between archaeology and tradition comes out clearly from a statement regarding Troy, supposedly one of the best sites served by tradition: 'There is something wrong either with Schliemann's Troy or with Homer's.[43] On the other hand, the spade digging at the epic sites in India has been expected to cover such an enormous range of question as, one would suspect, take a Delphic oracle to answer: 'When did Rama live? Where is Laṅkā? ... and what about the *Mahābhārata*? Is it a fact or a fiction? How about the mighty palaces mentioned in this epic? And the weapons wielded by the heroes at the battle of Kuruksetra?[44] Questions such as these or whether 'any traces of Rāma and Krishna'[45] have been found have, in the final analysis, led to the emergence of 'epic' archaeology as a serious archaeological undertaking, because as one scholar admits, 'When question like these cannot be answered, people, including scholars, think that we—archaeologists—are wasting our time and nation's money.'[46] It is precisely these considerations which have made the author of the present note feel wary: One would have expected archaeological planning and expensive excavations to rest on serious academic considerations and on the current state of research in archaeology and not on a decision to resolve certain emotional hang-ups regarding a particular epic hero or an archaeological site.

Methodologically too the 'epic' archaeology could produce important repercussions on archaeology elsewhere in the country. The *Mahābhārata* and the *Rāmāyaṇa* are not the only two literary compositions in India which can provide a case for correlation with archaeological evidence. If a fresh digging at Kaverippumpattinam is undertaken, and if its excavator wishes to model his assumptions on the archaeology of the *Mahābhārata* and the *Rāmāyaṇa*, he may no longer be excavating a site in the littoral region of the *Sangam* sources but may rather be searching for Kovalan and Kannaki, respectively the hero and heroine of the *Silappadikaram*.

Notes And References

1. *Archaeological Survey of India, Report for the Year 1871—72*, Vol. VI (Delhi and Agra) (reprinted, Varanasi, 1966), p. 3; ibid., 1871–2 and 1872–3 (Report of tour in Eastern Rajputana), Vol. VI, pp. 91 ff; ibid., Vol. 1, Archaeological Report for 1862–3, pp. 320–2. See also A. Cunningham, *The Ancient Geography of India* (reprinted, Varanasi, 1963) pp. 153, 303 ff. etc.

2. See A. Ghosh 'Taxila (Sirkap), 1944–45', *Ancient India*, no. 4, pp. 41ff; A Ghosh and K.C. Panigrahi, 'The Pottery of Ahichchhattra, District Bareilly, U.P.'; ibid,., no. 1, pp. 37 ff.

3. B.B. Lal, 'Excavation at Hastināpura and Other Explorations in the Upper Gaṅgā and Sutlej Basins 1950–52: New Light on the Dark Age between the End of the Harappa Culture and the Early Historical Period', *Ancient India*, nos. 10–11 (1954 and 1955) pp. 5–151.

4. See *Indian Archaeology 1954–55—A Review*, pp. 13–14; *IAR 1969–70*, pp. 4–5.

5. *Rāmāyaṇa: Myth or Reality?* (New Delhi, 1973), p. 45.

6. B.B. Lal, 'Archaeology and the Two Indian Epics,' *Annals of the Bhandarkar Oriental Research Institute*, Vol. LIV, pts. I–IV (1973), pp. 1—8.

7. See the report in *The Statesman*, Delhi, 1 April 1975, p. 8.

8. Sankalia, op. cit., p. 46. The internal evidence alone of the *Rāmāyaṇa* on the city of Ayodhyā, as available in the *Bālakāṇḍa*, gives a crucial clue for a dating which may correspond to its description:

Sāmantarāja–saṅghaiśca Balikarmābhirāvṛtāṃ/Nānādeśanivāsaiśca vaṇigbhirupaśobhitām/Rāmāyaṇa, 1.5.9, Baroda Oriental Institute edition, I, 1960. Here more than the description of the city, it is the expression *Sāmantarājasaṅgha* which is important. The expression *sāmanta* in the sense it has been used here cannot be earlier than the Gupta period.

9. Sankalia, op. cit., p. 16.

10. See M.I. Finley, *The Ancient Greeks* (Harmondsworth, 1966), p. 21.

11. Sankalia, op. cit., p. 45.

12. Ibid., p. 46.

13. A. Ghosh, *The City in Early Historical India* (Simla, 1973), pp. 68–70.

14. D.R. Chanana, *The Spread of Agriculture in Northern India (as depicted in the Rāmāyaṇa of Vālmīki)* (New Delhi, 1963), passim.

15. Sankalia, op. cit., pp. 48—9.

16. How difficult it is to make an assessment of the relative advances made by different areas will be clear from a look at the agricultural regions of India around the middle of the second millennium BC. Agricultural practices in central and eastern India are certainly not later than in the upper or central Gaṅgā basin.

17. H. C. Raychaudhuri, *Political History of Ancient India*, sixth edition (University of Calcutta, 1953), pp. 8–49.

18. Lal, op. cit. (1973), p. 7.

19. Ibid.

20. B.B. Lal, 'Further Copper Hoards from the Gangetic Basin and a Review of the Problem', *Ancient India*, no. 7, pp. 20–37.

21. I. 4. I. 14—17.

22. Chanana, op. cit., p. 19.

23. See the handout 'Archaeology of the *Rāmāyaṇa* Sites' published by the Archaeology of the *Rāmāyaṇa* Sites Project, Gwalior, March 1975.

24. V. Gordon Childe, *The Aryans* (London, 1926), p. 32.

25. See D.D. Kosambi, *An Introduction to the Study of Indian History* (Bombay, 1956), chs 4 and 5; for stages in the evolution of economy, see R.S. Sharma, *Light on Early Indian Society and Economy* (Bombay, 1966), pp. 55–66.

26. See R.S. Sharma, 'The Later Vedic Phase and the Painted Grey Ware Culture', paper presented at the 35th session of the Indian History Congress, Jadavpur, 1974.

27. Raychaudhuri, op. cit., ch. 2.

28. Ghosh, op. cit., pp. 4, 34.

29. Raychaudhuri, op. cit., ch. 3.

30. Ibid., p. 58. The list of countries which Raychaudhuri has compiled for the age of Janaka includes many of the Buddhist *mahājanapada* list. That the Brāhmaṇical sources perhaps relate to an earlier tradition may emerge from the substitution of Vajjian confederacy for Videha in the *Aṅguttara-nikāya* list.

31. See N. Wagle, *Society at the Time of the Buddha* (Bombay, 1966), ch. II.

32. Kosambi, op. cit., Chapter 4; for an analysis of the linguistic evidence, see Romila Thapar, Presidential Address, section 1, Indian History Congress, Varanasi, 1969.

33. The hypothesis, first put forward by B.B. Lal, op. cit. (1954 and 1955), 10–11, pp. 150–1, has been extensively discussed among others by Dilip Chakrabarti, 'The Aryan Hypothesis in Indian Archaeology', *Indian Studies: Past and Present,* Vol. IX, 4 (1969), pp. 349 ff. and B.K. Thapar, 'The Aryans: A Re-appraisal of the Problem', in Lokesh Chandra *et al.* eds, *India's Contribution to World Thought and Culture* (Madras, 1970), pp. 156–8, 160–1.

34. D.D. Kosambi, *The Culture and Civilization of Ancient India In Historical Outline,* Indian edition (Delhi, 1972), p. 91.

35. S. R. Das, '*The Mahābhārata* and Indian Archaeology', D. C. Sircar, ed., *The Bhārata War and Purānic Genealogies* (University of Calcutta, 1969), pp. 73–5.

36. Chakrabarti, op. cit

37. Raychaudhuri, op. cit., ch. III, section I.

38. Lal, op. cit. (1954 and 1955), pp. 147–51.

39. For the sense in which the term is being used here, see Barun De, 'Encapsulation as an Alternative to the Difficulties of Periodising Indian History', in S.C. Malik, ed., *Indian Civilization: The First Phase* (Problems of a Source Book) (Simla, 1971), pp. 83–4.

40. Lal, op. cit. (1954 and 1955), p. 6.

41. A. Ghosh, 'Notes', *Ancient India,* nos. 10–11, pp. 2–3.

42. Das, op. cit., pp. 56–8.

43. Rhys Carpenter cited by M.I. Finley, *Aspects of Antiquity: Discoveries and Controversies* (Harmondsworth, 1972), p. 36.

44. Lal, op. cit. (1973), p. 1.

45. Sankalia, op. cit., p. 1.

46. Ibid., p. 2.

Mahābhārata: Myth and Reality

S.P. Gupta and K.S. Ramachandran

Pāṇini defines 'Bhārata' as the battle 'of the Bhāratas'. Hence Mahābhārata would mean the 'great narrative of the battle of the Bhāratas.' In the Mahābhārata itself we come across the suggestion [that] it is known as Mahābhārata because of its greatness, enormous size and import, implying that the work 'out-weighs the Vedas and other sacred literature of India'. This also could be interpreted in a different way, viz., 'greatness and Indianness'; hence Mahābhārata.

The *Ṛgveda* mentions the Bhāratas as a martial race holding sway over the region lying between the Gaṅgā and the Yamunā. The story of the Bhāratas—the Mahābhārata—deals in detail the fierce family fight between the Kauravas—the Kurus and the Pāṇḍavas—the Pāñcālas, the two warring tribes. In this warfare the Pāṇḍavas came out victorious annihilating their brethren, the Kauravas, headed by Duryodhana. The Pāṇḍavas were led by Yudhiṣṭhira. This family fight formed the nucleus of the epic Mahābhārata. Around this nucleus developed the epic as we have it today. The main events recounted in the epic are given below:

1. Pāṇḍavas return to Hastināpur from their abode in the forest.
2. Events occur which create mutual jealousy in the minds of the Pāṇḍavas and the sons of Dhṛtarāṣṭra.
3. Duryodhana leaves Bhīma in the Gaṅgā after poisoning him; he also attempts to kill him by snake bite.
4. The construction of a house of shellac and an attempt to burn the Pāṇḍavas alive in it.
5. Pāṇḍavas foil the attempt by escaping from the house through an underground passage and taking shelter in the forest.
6. While in the forest, Bhīma, encounters a fight with the demoness Hiḍimbā and defeats her. The birth of Ghaṭotkaca, the son of Bhima and Hiḍimbā.

Excerpted from Introduction, S. P. Gupta and K. S. Ramachandran, eds., *Mahabharata—Myth and Reality: Differing Views*, Agam Prakashan, Delhi, 1976, pp. 1–51.

7. Pāṇḍavas reside with a Brāhmaṇa in the town of Ekachakra. Bhīma kills Bakāsur during this stay.
8. Pandavas leave the town to attend the Swayamvara ceremony preceding Draupadī's marriage. All the five sons of Pāṇḍu marry Draupadī.
9. Return of the Pāṇḍavas to Hastināpur.
10. Dhṛtarāṣṭra gives away half of his kingdom (viz., the Khāṅḍavaprastha) to the Pāṇḍavas.
11. Pāṇḍavas rule in Khāṅḍavaprastha for some years.
12. Pāṇḍavas commence a Rājasūya Sacrifice to prove their sovereignty over the whole earth.
13. Arjuna goes to unknown places in an exile for thirteen months, as punishment for encroaching upon the secret meeting of Yudhiṣṭhira and Draupadī.
14. Arjuna gets the hand of Subhadrā, Shri Kṛṣṇa's sister, in marriage, while in exile.
15. The huge fire of the Khāṇḍava forest and the saving of Māyāsura from it.
16. The construction of a Hall by Māyā.
17. The historic gambling. Pāṇḍavas lose to Kauravas.
18. Pāṇḍavas accept an exile for 12 years and residence for one year more in an unknown place. (They reside with the King Virāṭa).
19. Pāṇḍavas return from their exile and demand the return of their lost kingdom from Dhṛtarāṣṭra.
20. The memorable Bhārata Battle. Duryodhana is killed in the battle along with his colleagues, and Pāṇḍavas get the whole of his Empire.[1]

(This story was written in a volume comprising one hundred chapters.)

As already observed, the Mahābhārata available to us today in its grand and gigantic form includes—(i) legendary matter from the bardic repertoire having but a casual connection (or no connection at all) with the epic heroes; (ii) myths and legends of Brāhmanical origin and didactic sections pertaining to Brāhmanical philosophy, ethics and laws stressing the superiority of the Brāhmaṇas; (iii) cosmological, genealogical and geographical matter in the nature of Purāṇas and local fairy tales and myths; (iv) myths of Viṣṇu and later Śiva; (v) fables, parables, fairy tales and moral stories; (vi) ascetic poetry; and (vii) prose pieces and Brāhmanical legends and moral tales, entirely or partly in prose.[2]

Verily, the variegated subject found dealt in the Mahābhārata is encyclopaedic in character and accounts for its popularity through the centuries. Surely, the very statement found in the Mahābhārata itself: 'Whatever is (present) here (in the Mahābhārata) may be found elsewhere; what is not (present here) cannot be found anywhere else'; and again Vyāsa has touched

TABLE 1

Name of the work	Number of Verses	Beginning from	Author or Narrator	To whom narrated
Jaya	8800	The account of the return of Pāṇḍavas from their forest abode.	VYĀSA (Author)	Yudhiṣṭhira (Perhaps)
Jaya Bhārata	24000 Without additional stories	Manu's story manvādi	Śukācārya (Author)	Parīkṣit
Bharatetihāsa	24000 Without Upakhyānas	manvadi	Vaiśampāyana (Narrator)	Janamejaya
Mahābhārata	100000 including Upakhyānas	(i) Rājoparicrāda (ii) Āstīka's account.	Lomaharśana & Ugraśrava	Saunaka & other sages

(dealt with) every subject in this world, justified the enormity, greatness, cyclopaedic knowledge contained in this great epic.

Naturally, such a great work could not have been the handiwork of one single person, nor composed in any one single time bracket. Scholars recognise at least three redactions in the Mahābhārata as we have today.[3] The first one is by Kṛṣṇa Dvaipāyana Vyāsa consisting of 8,800 verses, called Jaya; the second by Vaiśampāyana comprising 24,000 verses, known as Bhārata, and the third (the present form) composed of a lakh of verses called the Mahābhārata was given to us by Sauta. For convenience, a tabulated form of the redactions is given above (Table 1).[4]

The Controversy: Genesis and Progress

On the fourteenth of September 1975, Dr D.C. Sircar, an eminent epigraphist and a former Chief Epigraphist to the Government of India, declared unequivocally to the UNI that the Mahabharata was a myth, devoid of little historicity, opening, as it were, the flood-gates of controversy all over the country. Traditional Sanskritic and Vedic scholars, historians and archaeologists have come down with an avalanche of articles and letters expounding their pet views and theories. Yet, this is not the first time such a controversy has been raked up. Let us now consider the commencement of the present controversy and how it progressed as time went by.

D.C. Sircar

Sircar, the originator of the controversy, now believed that the nucleus of the Mahābhārata was only a simple war-song of a 'petty family or tribal feud' around which the legend of the epic developed at a much later time.

Sircar's main contentions are:

(i) there is no reference to the Great War in the Vedic literature;

(ii) the exact period when the Mahābhārata event took place was uncertain even to the people of ancient India;

(iii) the Bhārata war has not been mentioned in the literature prior to 4th century BC;

(iv) Kurukṣetra, the scene of the famous battle, does not figure in the Vedic literature as a battle field; and

(v) the very presence of several traditions in the Mahābhārata, according to Sircar, clearly exhibit complete lack of knowledge of the Bhārata war amongst the people of ancient India. But when the story gained immense popularity among the masses and the gradual evolution of the same into an epic, assignment of a date was considered necessary and several chronological postulates came to be advanced.

As for the date of the Bhārata war there seems to be no consensus among scholars. Rebutting those who assign a date between the second and fourth millennia BC, Sircar points out that they clash with the accepted time-bracket of the Indus Valley Civilization and the arrival of the Aryans in India; the latter being some time in the middle of the second millennium BC. His contentions about the date can be summarized as under:

The *Kathāsaritsāgara* mentions that Udayana, king of Kauśāmbī, also a contemporary of the Buddha, was the fifth or sixth in lineal succession to Parīkṣit, a personality mentioned in the Mahābhārata. But the Purāṇic lists mention that Udayana was twenty-fifth in descent from Parīkṣit. This raises the problem of reconciling ten generations of priests with twenty-five generations of kings. The story in its final form portrays the war between the Kauravas and Pāṇḍavas—a struggle between the Kurus and Pañcālas. In the latter event the Parīkṣit tradition is unreliable and apparently introduced at a later date. Again, Dhṛtarāṣṭra and Parīkṣit find a place in the later Vedic literature while the main *dramatis personae*, Yudhiṣṭhira and his brothers, are totally ignored. This seems to be a factor to be reckoned within dating the epic. Further, some hold the view that the Mahābhārata war took place in the ninth-tenth century BC. Here again it is impossible to accept this for want of any reference to the war in the later Vedic literature. In this context it is rather impossible to understand why Ārya Bhaṭṭa, Varāhamihira (authors of the Gupta Period) as also the compiler of the historical section of the Purāṇas assign very early date, between the second to the fourth millennia BC.

Further, Bhagadatta, king of Prāgjyotiṣa—identified with modern Assam—was an important figure in the Mahābhārata. Bhagadatta does not find a place in the later Vedic literature. In the *Aṣṭādhyāyī* of Pāṇini also we find no mention of the people of the east and south in the fifth century BC. Hence, if we are to accept that Bhagadatta took part in the Mahābhārata war in the Haryana region he could have done so not earlier than the rise of the Nandas in the fourth century BC. Incidentally, this would also prove that the Mahābhārata story could not have developed prior to fourth century BC.

Finally, a word about the strength of the fighting armies. An *akṣauhiṇī* consisted of 21,870 war chariots, 21,870 elephants, 65,610 horsemen and 109,350 foot-soldiers. This would involve about forty lakh fighting men. To say that a close fight ensued involving seven to eleven *akṣauhiṇī* of warriors in a single battle field is a physical impossibility not only in days of yore but even today. This appears to be a hyperbolic poetic fancy.

Sircar is of emphatic opinion that, 'all stories of earlier *digvijayas* and empire building described in the epics and the Purāṇas have to be regarded as belonging to the domain of mythology and folk-lore and not history.'

But all the same, in spite of the above, Devakīputra Kṛṣṇa possibly is a historical figure for he is mentioned in the *Cāndogya Upaniṣad.*

H.D. Sankalia and Shashi Asthana

Professor H.D. Sankalia, supporting Sircar's view, is of the opinion that, 'the battle was largely a family feud and belonged to a time when the result of a battle depended primarily on individual strength and prowess.' He observes that this was also the case in ancient Greece and Troy. To him, literary references of Mahābhārata are incidental and they are not to be taken at their face value. Dr Sankalia, primarily being an archaeologist, his arguments mainly revolve around archaeological findings and deductions. He is rather critical about the date of the Mahābhārata war. Sankalia's contentions are as follows:

Several schools of scholars advocate divergent dates, viz., 3100 BC, 1400 BC and 900 BC, for the Mahābhārata war. They are primarily scholars of 'Sanskrit literature and arm-chair historians'. Before accepting any of these dates one has to weigh the implications arising out of this. We have to assume that during this time fairly large sized kingdoms existed in the present day Haryana, Punjab, Sind, Gujarat, Saurashtra, Kutch, Uttar Pradesh, Bihar, Assam and Kashmir. And also, that in all these areas a fairly well-developed culture and civilization prevailed. It is also imperative that the rulers here had a standing army of the major corps; their numerical strength not being taken into account. But, there is no foundation for these assumptions; for the epoch-making discoveries of the Indus Valley Civilization have pushed back the history of India to the third-fourth millennia BC and, about the people, Sankalia observes: 'A people

who had given the whole western and north-western India a well-planned and administered city-civilization, and that too for well nigh a thousand years, used comparatively simple tools and weapons of stone and copper-bronze. The most prolific of their weapons was a terracotta sling-ball found stored in huge quantities behind a defensive mud-brick wall at Mohenjo-daro and arrow-heads of copper, bronze and bone, possibly tipped with poison'. Spear-heads and axes of the Harappans were devoid of sockets and had to leashed to handles, probably of wood. The professor is sceptical about the efficacy of these weapons, particularly in close combat—*dvaṅda yuddha*—for these will buckle on impact. If the date of the Mahābhārata war is accepted as 3000 BC, or 1400 BC even, then it would follow that the epic heroes like Bhīma, Arjuna, Karṇa and others fought with insignificant looking microliths, small maceheads, sling balls of stone and terracotta (not more than 3 inches in diameter and 12 ounces in weight). For about fifteen hundred years, from Peshawar in the north to Broach in the south, and Karachi in the West to Delhi in the east, these types of weapons are common. But the difficulty in accepting these futile weapons is quite apparent. Further, the Mahābhārata refers to weapons made of iron which incidentally were not in regular use before the sixth century BC and definitely unknown before eleven hundred BC.

Two other points emphasised by Sankalia are:

(i) although large armies have been involved in the battle, the role of the foot-soldier therein is nebulous, and

(ii) while the Mahābhārata refers to war chariots, cavalry as such is not mentioned.

Finally, Dr Sankalia is of the opinion that 'archaeology has conclusively proved that the critical editions of the epics are not older than the fourth or fifth centuries AD.'

Shashi Asthana supports Sankalia on geographical considerations.

In the opposite camp, challen ging the views of Sircar and Sankalia, are Professor V.N. Datta and Dr H.A. Phadke of the Kurukshetra University, Dr V.C. Pandey of the Punjab University and Professor V.V. Mirashi of Nagpur. Besides these veterans, those who participated in the Seminar of Vedic Scholars and Astronomers organized by the Vidur Sewa Ashram near Bijnor, Uttar Pradesh, leave no doubt about the historicity of the Mahābhārata war. Let us now consider the views of these and other eminent scholars.

V.N. Datta and H.A. Phadke

The Mahābhārata war took place long after the compilation of the *Ṛgveda*, even later than the portion which deals with Dhṛtrāṣṛtra in the *Yajurveda*. Vyāsa, Parāśara, Vicitravīrya, Dhṛtrāṣṭra, Kṛṣṇa Devakīputra and Śikhaṅdī—all are mentioned in the early literature. The *Sāṅkhyāyana Sṛautasūtra*, attributable to about 600 BC, mentions that the Kurus were driven out of Kurukṣetra. This

would naturally mean that the Mahābhārata war had taken place before *Śāṅkhyāyana*, i.e., prior to 600 BC.

Further, the Pāñcālas were allies and did not supercede the Pāṇḍavas. In the Purāṇic genealogy, the decendants of Bhārata Kuru in the line of Arjunas continued but the next generation of the Kauravas is not mentioned at all. This goes against the postulate that war was a myth. They also say that several *sūtras* of Pāṇini bear witness to his intimate knowledge of the geography of the region. Dr Datta affirms that 'long before the Mahābhārata battle the tradition of fighting persisted in the Kurukṣetra region, a scene of tribal conflicts of the prehistoric and early Vedic times. This tradition was popular even at the time of Hieun T'sang's visit, in the seventh century AD, to Kurukṣetra. He stated that a terrible fight had taken place in the Thāneśwar region in remote times so that the entire area was covered with bones which were still visible to him'. In support of the above, he says that Asthipura of the Purāṇas was the site where the bodies of the dead in the battle were cremated and Cunningham has identified it correctly. The actual battlefield was somewhere between the present town of Kaithal and the village Amīn, both of which are near Kurukṣetra.

The Kurukṣetra scholars conclude their statement by posing a question: if the present sites of Hastināpura, Kurukśetra, Pānīpat, Amīn, Barnāwā and Bairāṭ are not those associated with the Mahābhārata episode where are the actual sites connected with the epic and the Great War?

V.C. Pandey and B.P. Sinha

Dr V.C. Pandey, upholds the view that the Mahābhārata war is not a 'myth' but a reality. Professor B.P. Sinha also feels the same.

Dr Pandey begins by quoting that 'It is never wise to reject traditions off hand; in most cases they contain a modicum of truth. Even if it be only a background for fiction'. 'Shorn of its literary embellishments', he says, 'the Mahābhārata contains a good deal of historical substance, and it is a work of great antiquity which was alluded to by *Āśvalāyana* and *Śāṅkhyāyana*. Pāṇini too has referred to the epic heroes, and even the seventh century AD. Chinese traveller Hieun T'sang has recorded the Mahābhārata war when he says that since that war heaps of bones are lying buried in the soil of Kurukṣetra. Such a persistent tradition could not easily be brushed aside as entirely untrustworthy'. If there is no reference to the Mahābhārata war in the later Vedic literature it is because the later Vedic literature developed with a predominant socio-religious background with disinterestedness in describing wars. It is also incorrect to say that the author of the *Āṣṭādhyāyī* had no knowledge of eastern India. 'Suramasa' mentioned in the *Āṣṭādhyāyī* has correctly been identified with Suranama in Assam. Further, from a careful study of the Purāṇic texts we gather that the entire northern India, covering Bihar and Bengal as well,

was Aryanized in the *treta yuga*, say by about 2400 BC; towards the end of which (by 2000 BC) Orissa and Assam were also Aryanized. Hence, it is not a matter for surprise if the king of Assam is mentioned in the Mahābhārata war.

The divergent views about the Mahābhārata war are attributed by him to the chronological disinterestedness of the Indians; for example, even about the dates of Mahāvīra and the Buddha there is no consensus. But the historicity of either is never in doubt.

Coming to the date of the Mahābhārata war, he says that the Purāṇas mention Vaivasvata Manu as the first ruler after the destruction of Hastināpura by great floods. Ninety-four generations of rulers separated Manu and the Mahābhārata war. Professor Pusalkar who made a critical study of literary data assigns *c.* 3100 BC for the floods and Manu. Rough calculation based on twenty years for each ruler, ninety-five generations of kings would take us to (3100–1900 BC) 1200 BC which could be the date of the Mahābhārata war. Further, Purāṇic texts mention that 36 generations of rulers intervened the accession of Candragupta Maurya and Yudhiṣṭhira, the epic hero. It is generally accepted that Candragupta Maurya came to throne in 322 BC. Similar calculation shows that seven hundred and twenty years would have elapsed since Yudhiṣṭhira's reign and the epic personality can be placed near about 1042 BC. Hence it is evident that the Mahābhārata war could have taken place between 1200 BC and 1042 BC. Purāṇic description of the regnal periods of the Maurya, Śuṅga, Kaṇva and Sātavāhana kings is fairly accurate. Again, the Purāṇic list of kings do not mention any pre-Mahābhārata kings. (In contrast, the Sumerian list assigns fantastically long periods of reign to their pre-flood kings which is difficult to accept). To some, this date might not be acceptable. It may be argued that the invading Aryans destroyed the Harappan civilization some time near about 1500 BC. But the Harappan civilization, according to C-14 dates, seems to have come to an end by 1750 BC. Again there is nothing against assigning an earlier date, *viz.*, 3rd/4th millennium BC to the *Ṛgveda*. In that case the Vedic Aryans can be associated with pre-and post-Harappan cultures.

Again, the date of the Mahābhārata war has also been calculated on the basis of astronomical observations, which, at times, have produced tangible results. Calculations by some based on the time of Bisma's death from data given in the Mahābhārata itself, have arrived at 1400 BC as the probable date for the Great War. This happens to be nearer the truth. However, a difference of two to three hundred years is possible in astronomical calculations; the margin of error is also true of the recent innovation of radiocarbon datings. On the grounds of such negligible discrepancies neither astronomical nor archaeological dating deserves to be discarded as untruth.

Pandey observes that the contention of Sankalia that there were no large kingdoms during the epic period is not borne out by facts. The Bhīṣmaparvan

enumerates no less than 250 Janapadas; similarly the Purāṇas also preserve the memory of such kingdoms, some of which were as old as the *Ṛgveda* itself. The kingdoms mentioned were economically and strategically viable. The rulers always bore high sounding titles, like *samrāṭa* and *ekarāṭa*. V.S. Agrawala, the doyen of Indological studies, is also convinced of the existence of such kingdoms in the first millenium BC. To say that such kingdoms were non-existent would amount to dispute the total evidence of the Vedic, Buddhist and Jain literature. Dr Pandey observes that, 'in a country like India which abhorred fanaticism and monolithic approach and which did not persecute the Kautsas and the Cārvākas, who denounced the Vedas and god respectively, the historicity of the Mahābhārata war would not have gone uncontested if it were a myth'. Further, if the Mahābhārata war was a family feud it is not understandable why this particular feud was selected and came to be glorified throughout the length and breadth of India and not any other family feud. It is also not explainable how the entire Kurukshetra region happens to be literally studded with no less than 360 sacred sites connected with the events and personalities mentioned in the Mahābhārata war. Dr Pandey is at loss to understand how Sankalia, who wrote in 1964 that the Painted Grey Ware Culture of north India was connected with the Mahābhārata could turn round and deny the historicity of the Great War. He would like to know, 'What precisely has happened in the last decade which has made the Epics and the Purāṇas look unreliable and the great war unhistorical?' It is most likely that most of the ancient sites associated with the epic has not been adequately excavated, hence the confusion.

Regarding the paucity of effective weapons, Dr Pandey counters with the statement that even in the *Ṛgveda* weapons of iron (*ayasa*) are mentioned; even special machines, like *purācariśma* which was used in the demolition of forts, are mentioned. Likewise, many sophisticated machines and weapons are referred to in our ancient literature. Similar views have been expressed by Professor B.P. Sinha.

V.V. Mirashi, Ajaya Mitra Shastri and Ram Gopal

Another protoganist challenging the 'myth' theory is Dr V.V. Mirashi. The date of the critical edition of the Mahābhārata, viz., 4th-5th century AD advocated by Sankalia is not accepted to Mirashi. He argues that since the Vākāṭaka king Sarvasena has used the Harivaṁśa, the Khilaparva of Mahābhārata in his Prakrit Kāvya *Harivijaya*, the original Harivaṁśa should at least date back to 2nd century AD. The antiquity of this epic is also proved by the occurrence of the names of some noted epic heroes in the Atharvaveda and the Yajurveda. The genuineness of the War also cannot be questioned, but it is possible that the war was not fought on such a grand scale as described in the texts.

As for the usage of weapons, Mirashi counters the contention of Sankalia, by saying that 'the *Ṛgveda* contained a description of how Vishpala's leg was cut off in a battle and the Aśvins gave him an iron one.' *Ayasa* (iron) often referred to in the *Ṛgveda* pertained to a period not later than 11th century BC.

Divergence of views regarding the Mahābhārata war is due to the absence of reliable history of the ancient period. This is also true of the historical period, where also there is no unanimity of opinion on innumerable issues.

Dr Mirashi accepts that there has been interpolation in the Mahābhārata and observes that, 'Originally it (Mahābhārata) was a small poem of 8,800 verses and was known by the name Jaya (victory), then it swelled to 24,000 verses and became known as Bhārata, and, finally, it reached the present stupendous size of the one lakh verses, passing under the name Mahābhārata.'

Similar views have been expressed by Dr Ajaya Mitra Shastri and Professor Ram Gopal.

Lallanji Gopal

Dr Gopal advocates a seminar on the Mahābhārata and Rāmāyaṇa. To him also, the Mahābhārata war is not a myth. From the sum total of the available evidence, he concludes, that 'some characters of the epic and a few details of its narrative find general credence from the later Vedic literature, including the Brāhmaṇas and Upaniṣads, early grammatical works of Pāṇini and Patañjali, the fragments of Indica written by Megasthenes, and Jain traditions which is generally accepted to have preserved most old material.' He also says, that 'unless we are sure that we have dug at the right spot we cannot over-emphasize the negative argument of the absence of archeological matter.'

The Vidur Seva Ashram, near Bijnor, in Uttar Pradesh, organized a three day seminar on this issue, between 19th and 21st October, 1975. The seminar was attended almost exclusively by Vedic and Sanskrit scholars, and a few astronomers who were in no doubt about the historicity of the Mahābhārata. Before going into the detailed arguments of the several scholars taking part in the deliberations, it is worthwhile to give in brief the outcome of the discussions which took place in the seminar, it centred mainly around the date of the Great War.

For the last several decades there have been four sets of suggested dates, *viz.*, (i), 5100 BC (ii) 3100 BC (iii) 1400 BC and (iv) 900 BC for the Mahābhārata. Of these the first has since been discarded. Presently, Vedic and Sanskrit scholars generally accept 3000 BC while historians and astronomers favour 1400 BC for the war. The latter has been upheld by eminent scholars like B.G. Tilak, R.C. Majumdar and Pandit Sitanath Tattvabhushana.

In the seminar, the Vedic and Sanskrit scholars relied on the '*nakṣtra digna*' mentioned by heroes like Bhīṣma, Kṛṣṇa and Karṇa in the epic, as also the

references to these in the Upaniṣads and Mahābhārata, but dates of later dynasties, epigraphical evidence, clay tablets of later kings have not been taken into consideration.

As against this, historians and astronomers deemed it necessary to consider the dates of later dynasties, like the Nandas, the Mauryas, the Śākyas, and the Guptas to arrive at an acceptable date for the Mahābhārata war. They pointed out that if the date propounded by the Vedic scholars is accepted then the date of Aśoka will have to be taken back to 1474 BC, that of Candragupta to 1536 BC, and Buddha to 1800 BC. This is rather difficult to reconcile with several precisely dated kings and events from the Mauryan period onwards.

The president of the conference Swami Bon Maharaj relying on the *Mahābhāgavata* and the commentary on this *itihāsa* by Jiva Goswami of Sūrya Siddhānta fixes the date of the war on Paushya amāvasyā day in February 3136 BC. The Mousala parva of the epic informs us that the war was fought 36 years before the death of Kṛṣṇa. That is to say the war was fought at the end of *Dvāpara yuga* and 36 years before the commencement of *Kali yuga*.

Raja

Professor Raja, a participiant in the Vidur Ashram seminar, is of the opinion that the war was fought on November 22, 3067 BC.

The learned professor has calculated this date on the basis of the position of certain stars and the position of the Sun in the zodiac. He says that when Yudhiṣṭhira performed the *rājasūya yajña* on the New Moon day with *Jeyṣṭa* and *moola* nakṣtras the sun was at 240.2°. Just before the commencement of the war with *amāvasyā* and *nakṣtra* the sun's position was 224.75°. After three lunations the sun was at 312.06° in the zodiac. Sun's position on the *śukla aṣṭamī* in the month of *māgha* was 318.6°, and the moon was at a distance of 90° from the sun, *i.e.*, in the *Rohiṇi nakṣtra*. This was the day when Bhīṣma left the earthly abode for heaven. On the *Ratha saptami* day, when the sun turns north, the sun's position was 316.5°. Therefore at the commencement of the *Vasanta ṛtu,* the equinox was at 46.5°. Now, in 1975 *Vasanta ṛtu's* beginning or the equinox was at minus 23.4°. Hence the equinox has slipped back by 69.9°. Average of the slip, or technically the precision of the equinox, is 72.5 years per degree. Calculation of the equinox, is 72.5 years per degree. Calculating the interval between the Mahābhārata war and 1975 on this basis, we arrive at 5068 years (69.9 × 72.5) or 3093 BC. Another astronomical feature mentioned in the Udyoga parva is that on the *jeyṣṭha* day, Jupitar and Saturn were in the constellation Rohiṇī; while Sun, Moon and Rahu were in *Jeyṣṭha,* causing solar eclipse. Calculations on the basis of this observation would lead to the date, October 13, 3067 BC as the date of the war. *Śarad ṛtu* began on this day when the sun was at 224.75°. *Amāvasyā* preceded the commencement of the *Śarad ṛtu*

and hence *Āmavasyā* began in the *atimāsa* (extra month). The succeeding new moon comes in the month of *mārgasira.* It is, therefore, on the *Śukla Ekādasī* day of this month, that the war was fought. *Śukla Ekādasī*, with *Kṛtikā nakṣtra* falls on Friday, the November 22, 3067 BC.

K.C. Varma and S.B. Roy

Kailash Chandra Varma, another participant of Ashram seminar, is of this opinion that the war was fought in about 1397 BC. He has pointed out the difficulties in accepting 3000 BC as the date for the war. If this is so, between 3138 BC and Candragupta Maurya, 328–27 BC, 2800 years would have elapsed, during which 32 Bṛhadrathas and 12 Śaisunāgas would have ruled. The average works out to 67 regnal years for each king. This average is not found anywhere in the world since 3500 BC when the first king of the First Dynasty of Egypt began to rule.

The date 3135 BC has been arrived on the assumption that *Kali yuga* commenced in the year 3102 BC and also could not have begun prior to Kṛṣṇa's *nirvāṇa.* This also raises another difficulty. In this case not only the history of our country but also that of others need have to be recast, taking the date of Aśoka back to 1474 BC, Candragupta Maurya to 1436 BC and the Buddha to 1800 BC. Further, we would be confronted with the problem of not accepting the well-established Egyptian chronology worked out on the basis of contemporary inscriptions since the beginning of the Fifth Dynasty. This dynasty cannot be earlier than 2800 BC. 'This calculation is based on the astronomical cycle on the coincidence of the first day of the civil calendar with the rise of the Sothis, *i.e.*, the Sirius which used to take place 1460 years since the Egyptians consistently omitted to incorporate the 'leap year' in their reckoning.'

Again, this date for the Mahābhārata war contradicts the chronology in Greek history. Herodotus avers that the Greeks obtained their alphabet from the Phoenicians sometime in the first quarter of the first millennium BC. The Kandhar inscription of Aśoka in Greek contains the Greek letters 'eta', 'xi', 'pti', and 'omega'; these letters were incorporated in the Greek alphabet system in about 400 BC. If we assume that the Mahābhārata war was found in 3138 BC, then it would mean that these Greek letters were incorporated in the Greek alphabets in circa 2900 BC. In that case Aśoka's inscription found at Kandhar should belong to c. 1602 BC and the Gupta era would commence in 328 BC. The last date is in direct contradiction with Fleet's date 319 AD for the beginning of the Gupta era. But this date, viz., 318 AD for the Gupta era is confirmed by the Mandasor inscription of Bhānuvarman and Kumāragupta II. Sen Gupta, after examining astronomical data contained in twelve inscriptions, including the one mentioning Gupta Era 162 corroborates Fleet's date, in his book *Ancient Indian Chronology*.

Dating the Mahābhārata war in the fourth millennium BC also affects the chronology of the historical events in Sri Lanka which, since 841 BC, is well-established for it has been based on their contact with ancient China whose chronology is indisputable. On the strength of a dated inscription (398 AD) of king Upatissa (AD 360–410) Paranavitana places the beginning of the Buddha Era of Sri Lanka in 544 BC. Hence 3138 as the date for the Mahābhārata war is not acceptable.

According to Varma, the Mahābhārata war was fought in 1397 BC. He argues that the Buddha, Prasenajit of Kosala, Caṇḍapradyota of Avantī, and Udayana of Kauśāmbī were contemporaries. They ruled 24 generations after the Great War. Now, to the number of regnal years per generation, Herodotus accepts 3 generations to a century. In recent years, G.S. Basu, calculating on astrological and *yuga gaṇanā* basis, advocates 33 years per generation in his *Purāṇapraveśa*. This also tallies with the epigraphic evidence of known dynasties. Calculations give a date for the Pāṇḍavas in the 14th century BC. Again, it is said that 32 Bṛhadratha and 12 Śaiśunāgas ruled for over ten centuries. The Nanda Dynasty was overthrown by Candragupta Maurya in the last quarter of the 4th century BC. This method of calculation also fixes the date of the Great War in the 14th century BC. S.B. Roy also accepts it.

B.V. Raman

B.V. Raman, the noted astrologer of Bangalore, is another scholar who has refuted Sankali and Sircar. He fixes the date of the Mahābhārata war on the strength of astronomical calculations to 37 years before the beginning of *Kali yuga* which started in *c.* 3102 BC. He asserts that, 'there can be little doubt that there was such a war even as there was a Trojan war. The very site of the battle field and array of the main topographical features named in the epic are identifiable. Dr H.D. Sankalia remarks that the historicity of the Mahābhārata was based on references to astronomical observation is not tenable, betrays his ignorance of correlation of historical events to astronomical positions widely used in ancient times.' He also observes that archaeological and anthropological evidences were inconsistent with the philological evidence. Besides, the available objective evidence for the movement of Aryans into India is still inconclusive. Hence the antiquity of Indian history should not be confined to 10th, 11th century AD.

In support of the lack of concerted research Shri Raman quotes Aurobindo: 'European scholars, and most Indian scholars still follow the Europeans, have shed no light whatever on the Mahābhārata beyond the fact that it is the work of more than one hand. All else it had advanced, and fortunately advanced little, has been rash, arbitrary or prejudiced theories ... always theories without any industrious consideration of the problem.'

Regarding the date of the Mahābhārata war his contention is as follows:

'At the beginning of the *Kali yuga* (*c.* 3102 BC) all the planets were in the mean conjunction coinciding with the passing away of Śrī Kṛṣṇa.

The Mousala Parva of the Mahābhārata mentions that Śrī Kṛṣṇa's death occurred 36 years after the Mahābhārata war, which would be sometime in 3066 BC. At the time of battle Jupitar and Saturn were near the star *Viśākha* and Mars; Venus and Mercury were in association. This position of the planets fits in about November, 3142 BC. Again, in the Karṇaparva planetary position on the 17th day of the battle is given. Likewise astronomical details during Yudhiṣṭhira's coronation, his performance of the *Aśvamedha* sacrifice are also given. These would certainly enable a dispassionate scholar to fix the year of the Mahābhārata war'. Mr Raman concludes saying that 'the Mahābhārata war was not only a historical reality but also marked an epoch in the long history of India and the beginning of a new age.'

B.B. Lal, V.N. Mishra, R.C. Gaur and A.H. Dani

As the controversy rolled on Professor B.B. Lal came forward on behalf of those who held the view that the Mahābhārata is not a myth. He is an archaeologist and, therefore, his line of approach has been slightly different from those of the rest. He has tried to correlate the archaeological evidence with the traditional account. According to him, there are at least three grounds on which we can say that the Epic and Purāṇic tradition has been corroborated by the archaeological evidence:

(i) Most of the important sites connected with the main story of the Mahābhārata war have yielded from their lowest levels the material items of a culture designated by archaeologists as the 'Painted Grey Ware Culture (abbreviated as PGW Culture) since it is characterized by a particular type of pottery which is grey in colour and which is painted. The economy of the people was pastoral-cum-bricks. It was basically a rural culture. The people made their artefacts of copper and iron both, although weapons of war have not been found in any appreciable number, except for the arrowheads.

(ii) The Painted Grey Ware pots have also been found at Kauśāmbī, an ancient site on the River Yamunā, about 50 km from Allahabad, in U.P., in forms and paintings which show a kind of degeneration in the ware, a fact which may indicate that the Kauśāmbī Painted Grey Ware represents the last phase of the Culture.

(iii) There is clear evidence of a heavy flood in the Gaṅgā which destroyed the settlement of the Painted Grey Ware people as Hastināpur, the capital town of the Pāṇḍavas. After that the site was completely deserted. When reoccupied, after a century or two, Hastināpur witnessed the arrival of a new culture also—

the Northern Black Polished Ware Culture (abbreviated as the NBP Culture).

These three archaeological facts corroborate the traditional account as follows:

Firstly, on the basis of the C–14 dates the NBP Culture is dated to 500–200 BC bracket. Since the P.G. Ware Culture precedes it, and there is a date going back to 1100–1000 BC range, the date of the P.G.W. Culture may be bracketed between 1100–500 BC (or later by two hundred years, since at sites like Ataranjīkherā and Śrāvastī it overlaps with the NBP Culture, making the total range of the PGW Culture as 1100–300 BC). It means, the PGW Culture was there at most of the Mahābhārata sites during 1000–900 BC, the date when the Mahābhārata War took place according to different calculations made on the Purāṇic data, particularly, those by Pargiter and his own.

Secondly, according to *Matsya Purāṇa* (50, 57, 65, 66, 78–79) and *Vāyu Purāṇa* (99, 249b, 250, 256–58) when Hastināpur was destroyed by a flood in the Gaṅgā, King Parīkṣit, fifth in the line of the Pāṇḍava rulers, shifted his capital from Hastināpur to Kauśāmbī. The archaeological evidence of flood at Hastināpur, according to Professor Lal, corroborates this Purāṇic evidence of the flood.

Thirdly, since the Kauśāmbī Painted Grey Ware can be related with the last stages of the Painted Grey Ware of Hastināpur, it is possible that the Purāṇic tradition of the capital being shifted from Hastināpur to Kauśāmbī is correct.

Professor Lal, therefore, feels that there is some strong archaeological reasons to believe that if the Mahābhārata war took place before the birth of the Buddha, as it appears to be the case if all the literary traditions of ancient India are not fake, and if the calculations based on the dynastic history, as contained in the Purāṇas, bring us to 1000–900 BC as the bracket of the date of the Mahābhārata War are then, the painted Grey Ware Culture is the only archaeological culture of the Indo-Gangetic divide which should be taken as belonging to the times of the Mahābhārata War. Several other scholars have followed him.

Amarendra Nath

As against this, Amarendra Nath feels that the archaeological evidence as quoted by Professor Lal holds good only if we accept his stand that the Mahābhārata War was fought in the tenth century BC. Since, according to another view, particularly of K.C. Varma and S.B. Roy, the date of the War falls in the 15th century BC, it is possible that the archaeological culture belonging to this period is represented by the Late Harappa-Ochre Colour Pottery complex whose remains have been found on several sites in the Indo-Gangetic divide, including Kurukṣetra and Hastināpur. He feels that the methodology adopted by Professor Lal—trying to find out the remains of a common culture-complex at most of the sites associated with the Mahābhārata story to determine the culture of

the Mahābhārata period—is itself questionable. Why should we think that there has been a single archaeological culture all over the region in which the drama of the Mahābhārata was played?

U.V. Singh, J.P. Joshi and R.P. Sharma

As against this U.V. Singh and others feel that the date of the Painted Grey Ware itself may go back to the fourth, if not the third, quarter of the 2nd millennium BC since at sites within the Kurukṣetra township, and Bhagawānpurā, a site about 40 km. from here, the Painted Grey Ware appear to have overlapped with the Late Harappa Culture. Although the date of the Late Harappa Culture is as yet not known, since no C-14 date is available, but on the basis of the latest dates of the Harappa Culture, which falls in the 18th century BC and the earliest date of the Painted Grey Ware which fall in the 11th century BC, it can safely be said that the Late Harappa Culture in Harayana belonged to the second half of the second millennium BC. If the evidence of this new archaeological discovery is taken into account then whatever date one chooses for the Mahābhārata War—15th century BC or 10th century BC—the archaeological culture belonging to the Mahābhārata War times may be the Painted Grey Ware.

S.P. Gupta and A. Ghosh

While reviewing the correlation between the Hastināpur P.G. Ware and the Kauśāmbī P.G. Ware, as proposed by Professor Lal, Dr. S.P. Gupta has expressed some concern. According to him the two wares seem to be different, if not generically then at least in their typological gamut and a great variety of painted designs, fabrics and other related aspects. He relies on the evidence furnished by Shri L.M. Wahal that the true PGW assemblage has not been so far found beyond District Fatehpur. Shri A. Ghosh has raised a few similar objections as also several other related with the ancient texts and genealogies.

M.C. Joshi, J.P. Joshi and Upendra Thakur

Sarvashri M.C. Joshi, J.P. Joshi and Dr Upendra Thakur feel that the flood which destroyed the Painted Grey Ware settlement at Hastināpur was one of the usual floods in the Gaṅgā which often destroyed settlements on its banks. There is hardly any reason to associate it with the Purāṇic flood. Dr S.P. Gupta, however, stands by Professor Lal and says that in order to judge the magnitude of the flood one has to see the aftermath of the flood, and since it is proved beyond doubt that after the flood the site was completely deserted for a pretty long time, the flood should be taken as unprecedented.

The first two authors also feel that the PGW Culture was a rural culture and, therefore, it cannot be related with the culture of the Mahābhārata times

which appears to be an urban culture. If this argument is taken seriously, Dr Gupta feels, then the Mahābhārata War should be placed either in the 3rd millennium BC or in the 3rd cent. BC since, in between these dates, archaeologically, India was without cities. But these authors, along with many others feel, that this was not the case, that the Mahābhārata War has to be placed in between these two dates. Clearly enough, these authors contradict their own statements.

Shri M.C. Joshi has drawn our attention to the occurrence of the O.C.P. Culture also at Hastināpur, in its lowest levels. He also points out that according to traditional accounts the town of Hastināpur was founded by the Paurava King Hastina. It will then mean that archaeologically, there were two cultures of the Pauravas; one, the O.C.P. (when the town was founded), and, the other, the PGW (when the War took place). It does not appeal to reason. Dr S.P. Gupta feels that although it is not improbable, yet it should not be imagined that the founder of the town should be identified with the earliest cultural remains of the site. Below the cities of Śāhjahānābād and Tuglaqābād, there are the remains of pre-Medieval period.

In reviewing the controversy, we offer our comments:

In this controversy there are two diametrically opposed groups—one vehemently upholding that the Mahābhārata war was a total 'myth' and the other trying to establish with equal vehemence its reality and historicity.

But the common ground is the one where both agree that the epic itself has undergone a metamorphosis, growing from a lilliput—8,800 verses—to an elephantine size, comprising a lakh of verses.

We are not concerned whether the Mahābhārata war was a total skirmish or a family feud, the theme of which developed later into an epic but with its reality or otherwise. The answer is clear. The very acceptance by the staunch opponents that the epic was woven around a tribal feud or family fight is sufficient to accept the core of the epic as a reality. If it is real, its historicity cannot be contended. The contention that the war is not found mentioned in later Vedic literature, or in the literary works prior to 4th century BC, is a point to be considered. As regards the former, one scholar is of the opinion that the later Vedic literature is of a socio-religious work and hence there is no place in it for dealing with wars. Yet the names of personalities taking part in the war are mentioned. Be it as it may, the contention of the protagonist of the 'myth' theory would usher in the time element rather than dispute the authenticity of the epic war; this brings us to the date of the war.

Scholars are not unanimous about the date of occurrence of the war. A wide range of dates varying from the last quarter of the 4th millennium BC to 600 BC has been proposed and advocated with vociferous arguments. The camp, again divides into two (i) one group working out a plausible date from the

astronomical observations found in the epic itself and the other arriving at a date calculated on the basis of generations of kings mentioned in the Purāṇas who ruled Bhāratavarṣa prior to the accession of Candragupta Maurya. Lack of chronological sense of the epic writers, for that matter even of rulers prior to the accession of Aśoka, the first Indian ruler to have left behind evidence in writing, has given much scope for speculation. Yet we cannot escape from assigning a probable or nearly acceptable date for the war. To us, the astronomical dates appear to be more on the higher side, and many have pointed out the shortcomings of this method. The other method has its drawback since the number of regnal years assigned to each king is arbitrary. Therefore, to the arrive at an acceptable date, it is imperative to integrate all methods of dating, including archaeological dating—sequence and other methods. To us, a date near about 1000±200 BC appears to be plausible.

How can archaeology help us in this matter? Obviously, the answer is 'through excavation of potential sites'. Professor Lal has shown us that a particular ceramic industry viz., the Painted Grey Ware, is invariably found at sites usually associated with the Mahābhārata story. Circumstantial evidence leads to this favourable deduction. In a country where tradition dies hard and the people are conservative in their religious outlook, there would appear hardly any chance for change. Therefore, it is reasonable to expect the names of important places mentioned in the epic surviving in some manner or other even to present day; Hastināpur, Pānīpat, Bhāgpat, Kurukṣetra are only a few. Do all these have really any connection with the epic towns? It is hard to answer. Only intensive horizontal excavation would throw some light. But one thing seems to be certain, the emergence of the later Vedic people, the Painted Grey Ware and the ushering in of iron seem to be inter-related, and a proper study of these is bound to lead to some tangible results.

The Mahābhārata And Archaeology

S.P. Gupta

Our task here is now to present the Mahābhārata controversy in the frame-work of archaeology in some detail. In India, however, not many serious attempts have been made by archaeologists to throw light on the historicity of the Mahābhārata story and the material culture of the period of the original Mahābhārata. Nevertheless, the one attempt that has been made with real passion has been made by an eminent field archaeologist, Professor B.B. Lal. Fortunately, it caught the attention of Professor A.H. Dani, a distinguished Pakistani archaeologist, who added some new dimensions to his thesis. Shri B.K. Thapar, a very close associate of Professor Lal in most of his major

excavations, has recently made a reappraisal of practically all the attempts made so far as to the the Aryan problem wherein he has also demonstrated that Professor Lal's theory is by far the most sound.[5]

But, before it is stated what Professor Lal has done in this respect, a word may be added as to what archaeology can and cannot do in the present context, particularly for the lay readers.

Limitations and Possibilities of Archaeology

Archaeology deals primarily with the material remains of the cultures of the bygone days. Experience has shown that these cultures can be grouped broadly into two: one, in which we get the objects made of bone, stone and clay along with coins and epigraphs, and, the second, in which the latter two categories of antiquities are absolutely non-existent. The former is called Historical, while the latter, Prehistoric. Archaeologists dealing with the historical cultures use the expertise of numismatists, epigraphists and art historians, besides several others, while the archeologists dealing with the prehistoric cultures use the expertise of scientists, like palaeontologists, geologists and anthropologists.

In other words, while the scholars of the former group have much reliable data in terms of precisely dated documents, the latter have to reconstruct the past-as-it-was largely on the basis of the circumstantial evidence, often based on not-so-precisely dated remains. However, in both the situations all the material remains do not survive, those which survive the ravages of time and happen to lie within the area excavated by archaeologists, are indeed very few. Obviously, the limitations of such an evidence are more than the possibilities it offers, and, to that extent, archaeological remains are never expected to give the full picture of the bygone days. By its very nature, therefore, archaeological knowledge is a fragmentary knowledge, although it is ever-expanding. But then it has an edge over certain other categories of social and life sciences dealing with ancient cultures. The evidence is unimpeachable since it is based on tangible objects and is verifiable again and again. When obtained by excavators in closely observed conditions, there is hardly any chance of ambiguity and interpolation which are common features of literary evidence pertaining to ancient history. When items requiring a different kind of expertise are further studied by specialists, as indicated earlier, the authenticity and trustworthiness of the archaeological evidence is enhanced manifold. This is precisely the reason why archaeology is now becoming increasingly important with every serious scholar of past cultures.

Thus, once it becomes clear that archaeology works under great limitations in spite of the fact that its possibilities of finding out the truth is immense, we hope, the readers will be able to appreciate the role of archaeology in the present context—it presents facts but not all the facts.

Do Facts Speak for Themselves?

But do all facts speak for themselves when we meet them in our everyday life? Probably, they do not. Otherwise why should we have courts of law in which judges put questions to the facts of a case through the lawyers presenting the case.

Obviously, when incidents occur, they leave behind a set of facts, often dead and mute, and in order to elicit truth we have to frame proper questions and put them to the facts, then alone they are expected to speak the truth. Conversely, if we frame wrong or irrelevant questions we will get only wrong answers or no answers at all. Clearly, what is much more important than the discovery of the archaeological facts, is the framing of proper questions on the part of the investigators. In other words, left to themselves historical facts are dumb, they start speaking only in the hands of the investigators who are capable of putting proper questions to them. This particular faculty of the archeologists dealing with the epics is, therefore, of supreme importance, since howsoever good a digger of an ancient site may be, implicitly it will never mean that he is equally capable of extracting the truth from the excavated material, although he is placed in a much more advantageous position to investigate the truth than anyone else.

With this much of preface, considered essential for the lay readers as well as the non-archeologists who are seriously interested in knowing the truth through the means of archaeology, we now proceed to another question: What is the nature of the Mahābhārata and how much archaeology, in the light of its limitations and possibilities detailed above, is really capable of establishing the truth contained therein?

The Basic Nature of the Mahabharata and the Problem of its Stratification

The Mahābhārata is an epic. No epic is ever a diary of events or a simple narration of incidents which have occurred in a given times and space. It may be a fiction, a pure fiction, or else it may be based on a tradition handed down through the ages, or else on a mythology held by the people as sacred, at one time or the other, or else on an event which actually occurred and was known to the author either personally or through someone he had no reasons to disbelieve. But in every case, let it be clearly stated, an epic is a distinct creation of the author, much more different from the actual facts of history, or even tradition and mythology, than sometimes imagined. Further, it is common knowledge, that hardly there has been an epic writer who could completely cut himself off his times and describe the past exactly as-it-was; 'present' imperceptibly creeps into the 'past', which comes to the notice of the critics and not the devotees. As is well-known, the Mahābhārata has several recessions and Sanskrit scholars have been busy over the past several decades in bringing out what we call the 'Critical Edition'

of the Mahābhārata, by picking out the most common occurring events and narrations, and leaving out those which individual authors seem to have added from time to time in their own versions. Obviously, it cannot be over-emphasised that an epic based on historical events is always a peculiar mixture of myth and reality, or facts and fictions; only rarely it is complete fiction or complete reality. So the proper question to be posed in the present case may be: Mahābhārata: How much reality and how much myth, and not just myth or reality.

Now, once we start with the presumption that there is (or may be) some historical base of the Mahābhārata, we are faced with the problem: how to separate that base from the myth and legends? The first step should be directed towards the task of determining the internal stratigraphy of the text since then alone archaeologists can be rightfully asked to discover the remains of material cultures in the same sequence for establishing the historicity of the Mahābhārata. This the archaeologists will have to leave mainly to the historians, Sanskritists, philologists and linguists. These scholars, however, so far at least, have not been able to achieve any appreciable degree of success beyond showing us that there is ample internal evidence to prove that the present-day Mahābhārata has grown in stages, over a considerable period of time. It grew from 8,800 verses when it was called Jaya, through 24,000 verses, when it was called Bhārata, to 1,00,000 verses, we have now in the form of the present Mahābhārata. In other words, they have not been able to distinguish the Jaya verses from the Bhārata verses, and the Bhārata verses from the remaining Mahābhārata verses, let alone determine their chronology.

In any case, one thing is certain: some of the portions do belong to the early centuries of the Christian era or a couple of centuries earlier. In this connection, probably, the portions of the Sabhāparva mentioning the Indo-Greeks, the Syrians, the Romans and other foreign nationals, from whom, it is alleged, the Pāṇḍavas extracted tributes for their *digvijaya* or universal conquest, may be easily quoted since the dates of their contacts with India are fully known. But except for such references, and also perhaps the descriptions given of the architectural features of palaces, forts and temples, which are clearly of the buildings of the early part of the first millennium AD, if not later, nothing definite can be said about the dates of the other portions. It appears quite clearly that at least some significant portions of even the critical edition of the Mahābhārata reflect the cultural and political condition of the country of the early centuries of the Christian era. But, then what are the portions which reflect the cultural life of the people of 1000 BC or 400 BC or 200 BC, etc., the dates generally assigned to the addition and interpolation made in the text? So far at least, there is hardly any clear-cut idea about it on the part of the researchers. Still, when archaeologists are asked in several indirect ways to unearth and show the remains of the cultural items mentioned in the entire

or most of the Mahābhārata into the levels of the third or second or early first millennium BC, they politely say 'it is a task impossible to perform'. This is, probably, putting wrong questions to archaeologists to elicit right answers.

Now the next question that may be straight a way put is: well, if, in their own words, archaeologists cannot discover cultural items of different periods, to which the present Mahābhārata text belongs, in the levels of a single unified period of 1,000 BC or earlier, or later, then what they are expected to do in the present context?

The Question of Methodology

In this regard, there is a clear-cut starting point: let archaeologists determine their own sequence of cultures hidden below the earth independent of the details given in the Mahābhārata, and let the Sanskritists and historians determine their own sequence of events and cultures contained within the text of the Mahābhārata independent of the archaeological sequence of cultures. Once it is done, let both of them sit together around a common table and attempt correlating the two sequences to arrive at the truth. But since researches of this kind make a long process, let them meet annually and compare notes for their future guidance; the present atmosphere of two sets of scholars somewhat accusing each other of mis-representing the facts or of professional incompetency should end once and for all. Fortunately, there are several forums for good academic discussions in our country, one of them being the Indian Archaeological Society which holds its meetings annually and publishes its bulletin *Purātattva* regularly; No. 8(1976) of this Bulletin contains several articles on Tradition and Archaeology.

It may be mentioned that in the field of prehistoric archaeology (which includes the 'protohistory' of certain writers), into which the present controversy largely falls, inter-disciplinary approach alone is considered valid. When a prehistorian goes to make a thorough study of the cultures of the Stone Age or Bronze Age or Early Iron Age, he asks his geologist friend to work out independently the chronological sequence of the environmental changes in which man lived and the geological formations in which the artefacts of the prehistoric men got embedded. He, however, himself takes up the burden of studying the artefacts and working out independently their sequence in terms of technological development and cultural stages, mainly on the basis of stratigraphical evidence. Then they meet together to correlate the two types of results and arrive at sound conclusions regarding the changing pattern of cultures in time and space. In this endeavour they also take help from anthropologists, botanists, zoologists and other experts in the cognate subjects.

One may wonder as to what do we want to emphasize through this unseemingly long discussion on pure methodology? To them, our answer is

simple: without evolving a proper methodology no attempt can ever be expected to yield the desired result—in the present case, the myth and reality of the Mahābhārata. The archeological methodology is inter-disciplinary, i.e., it combines the expertise of not only the social sciences but also of the life sciences, as also physics, inorganic chemistry and petrology, as must have become clear to the readers by all that we have said so far. And it is this methodology that archeologists recommend for tackling the problem of the Mahābhārata. Professor Sankalia used it when he took up a similar study in the context of the Rāmāyaṇa. But that has been, more or less, a single man's attempt, although by far the most brilliant attempt, to correlate the results of studies made by several scholars belonging to a number of disciplines, whether we agree with his conclusions or not. We recommend joint efforts, constant dialogue over a number of years among scholars and experts of different disciplines, followed by quick publications to elicit useful information from the non-participant scholars, experts and interested readers. Simultaneously, it will also give proper caution through comments and criticism; after all, caution is much more important in scientific studies than laudable words.

Sequence Of Archaeological Cultures In The Indo-Gangetic Divide

We may now consider the sequence of cultures which archaeology has been able to discover in the supposed locale of the Mahābhārata story, the region between the ancient Saraswatī-Dṛṣadavatī basin in Haryana and Rajasthan and the Gaṅgā basin in Uttar Pradesh, known as the hub of the ancient Āryāvarta. The sequence of cultures before the Aśokan times is as follow:

Date (with ± 100 years on either side)	*Culture*	*Stage*
600 BC—200 BC	Northern Black Polished Ware Culture	IRON
1000 BC—400 BC	Painted Grey Ware Culture	
1800 BC—1000 BC	Ochre Coloured Pottery Culture	
1900 BC—1000 BC	Late Harappa Culture: Chalcolithic Culture	
2500 BC—1700 BC	Harappa Culture	COPPER-BRONZE
3000 BC—2000 BC	Proto-Harappa Culture (sometimes called 'Sothi-Kot Diji complex of the Pre-Harappan origin')	
	STONE AGE CULTURE	

Correlating Archaeological Facts With Traditional Accounts

As said earlier, we have no sequence of events or textual stratification worked out so far within the deposit accumulated over centuries which has come down to us as the Mahābhārata of today with the result that proper correlation, stratum by stratum, between the archaeological cultures and the Mahābhārata cultures is not becoming possible to any appreciable degree. It may be recalled that the problem of stratification of Kauṭilya's Arthaśāstra has also been there for a long time but when attempts were made, some happy results have come to light. We may, in the present case, however, state a few points where correlations between archaeology and tradition is possible, hopefully leaving the rest for the future attempts.

The Mahabharata belongs to the Iron Age

To our mind, the first point to be settled by the Sanskritists and historians is whether the original Mahābhārata, the Jaya, belongs to the Stone Age or Copper-Bronze Age or Iron Age. Our feeling is that it belongs to the Iron Age, because of two reasons: firstly, most of the weapons of war used in the Great War of Kurukṣetra appear to have been made of metals, including iron, and, secondly, whatever may have been the meaning of the term *ayasa* in the *Ṛgveda*, none has ever doubted the meaning assigned to the term *kṛṣṇa ayasa*, *i.e.*, 'black metal' or iron, occurring in the *Atharvaveda* which belonged to the pre-Mahābhārata period. Archaeological discoveries made so far in the whole of South Asia shows that the technology of iron entered into India only around 1000 BC, of course, ±100 to 200 years, but not more than that at the present showing.

Archaeologically speaking, the Jaya, or the original Mahābhārata, has to be placed anywhere between 1200 BC and 800 BC or later, but possibly not earlier unless the overlap phase of the P.G.W. and Late Harappa Cultures in Kurukṣetra region is precisely dated.

Painted Grey Ware: The Earliest Iron Age Culture of Indo-Gangetic Divide

The other point, which appears to have been more or less fixed as the corollary of the first is that the earliest iron age archaeological culture in the Indo-Gangetic divide is represented by the Painted Grey Ware Culture, although it is just possible that, to begin with, i.e., in the earliest phase, the culture may not have contained iron implements, but this surmise, which is based more or less exclusively on the evidence furnished by the excavation conducted at Hastināpur and Bhagawānpurā, has still to be supported by the results of further excavations at the same sites, and more excavations at other sites.

Identification of Mahabharata towns

The third fixed point appears to be the results of the task of identifying the towns and villages connected with the Mahābhārata story with some of the still existing sites, since all the human settlements of the Mahābhārata period cannot be taken as completely destroyed and obliterated either by natural agencies or human factors. In many cases, as we all know, the ancient names, either in their original forms or in slightly modified forms (but easily recognizable as such) still continue to exist for certain mounds, such as Kurukṣetra in Haryana, Hastināpur in U.P. and Indraprastha in Delhi. And it is just possible, that in India, the land where there has often been a marked continuity of many traditions, these are the same sites as mentioned in the Mahābhārata. But let us argue along with some others that there is also the possibility that this identification is not correct since identical geographical names occur not only within the present boundaries of India but also outside India. There is not one Ayodhyā but several Ayodhyās, not one Kamboja but several Kambojas, not one Śrāvastī by several Śrāvastīs. But in this context two things must be borne in mind: firstly, that most of the sites, in countries other than India, known after the Indian sites, are usually associated with Brāhmanical or Buddhist religions, and that they were established by the Indian emigrants for their everyday needs of moral and spiritual life. There is a recorded history for most of them. They may, therefore, be completely ruled out of consideration. Secondly, the original Mahābhārata story is a unified story whose events, historical or otherwise, took place within a unified geographical area, and, therefore, the physical proximity of many of the sites in question has to be one of most significant factors in determining their identification.

Let it be once again reiterated that the major Mahābhārata sites, such as Kurukṣetra and Hastināpur, have all along been considered as pious and meritorious as the major Rāmāyaṇa sites, such as Ayodhyā, Prayāga and Citrakūṭa, have been. Therefore there is every possibility that the proposed identification of some of the Mahābhārata sites with the still existing mounds in the Indo-Gangetic plains and known by the same names is correct, as proposed by Professor Lal.

Painted Grey Ware found in the Lowest Levels at Most of the Mahabharata Sites

If it is so, then, archaeologically speaking, our task becomes easier than sometimes imagined. Let us, as the next step in our study, know the sequence of cultures existing at these sites and mark out the levels of the earliest iron age culture, independently, at each of these sites, since following the methodology detailed above, the original Mahābhārata does not seem to be older than the oldest iron age culture. Professor B.B. Lal's excavations and explorations have shown

that it has been the painted Grey Ware Culture. This was struck in the lowest levels of all these sites; besides, of course, one exception, of Hastināpur, of the copper-bronze age culture, the O.C.P. culture, being explained later.

If that is so, archaeologically speaking, no pre-Painted Grey Ware Culture can be taken to represent the culture of the times of the original Mahābhārata, irrespective of the fact whether the Mahābhārata War was great or small, or a petty family affair. But then why PG Ware Culture alone be taken to represent the original Mahābhārata period?

Northern Black Polished Ware also Found at Mahabharata Sites

The original Mahābhārata, let us hypothesize, belonged to the N.B.P Ware Culture, the most wide-spread iron age culture of the post-Painted Grey Ware period. The remains of this culture have also been found at most of the places connected with the Mahābhārata story. The position, however, remains the same as with the P.G. Ware. Purely from the archaeological point of view, it is not impossible, but Sanskritists and historians do object since the implication of this theory has been vehemently contested by them, that the original Mahābhārata cannot be older than the sixth century BC. It is too late a date for them to accept since the Buddhist literature repeatedly makes mention of the Mahābhārata stories and the genealogies of kings given in the Purāṇas do not at all fit into this late chronology as has been shown by Professor Lal.

Harappa Culture and the Mahabharata

No serious student of history and archaeology has ever correlated the two, for two specific reasons: firstly, within the locale of the Mahābhārata story, Kurukṣetra, Kuru-Pañcāla and Mathurā, there is no major Harappan site, and secondly, none of the sites directly related with the Mahābhārata story has yielded the remains of the Harappa culture. In fact, the entire culture gamut of the Harappa Culture is starkly different from the one reflected in the Mahābhārata.

Mahabharata and the Remains of the PG Ware Levels

Thus, by the simple process of elimination of the claims of different cultures and periods we reach to the inescapable conclusion that if the original Mahābhārata is a historical reality, even in the form of a family feud, as Professor D.C. Sircar maintains, then the material culture belonging to the period of that war or feud may reasonably be taken to be that represented by a post-Harappan and Pre-N.B.P. Ware Culture but still belonging to the iron age, and that happens to be the PG Ware Culture alone, in the Indo-Gangetic divide at least. We must, however, hasten to add that it does not at all mean

that archaeology has proved the authenticity and historicity of either the story of the Mahābhārata or the entire culture form of the material equipment that emerges from the study of the present Mahābhārata. Far from it. After all, neither the palaces of the Kauravas and Pāṇḍavas nor the temples and other monumental structures mentioned in the Mahābhārata have been unearthed in the PG Ware levels of the Mahābhārata associated sties. Archaeological evidence shows that the structures, only huts and mud or mud-brick houses, only rarely baked brick buildings, were extremely modest in the days of the P.G. Ware, at least on the present showing. The implications of our analysis in this regard, as said earlier also, are that the descriptions of the structures in the Mahābhārata are likely to have been added after the 3rd century BC when the construction of elaborate structures of palaces and temples, and residential houses of the common man is likely to have begun in northern India, from which the authors seem to have taken their clue.

The Purāṇas, Mahābhārata & Archaeology

That the problem of correlating the literary and archaeological data in the present context admits some more aspects also has been demonstrated by Professor Lal. According to the Purāṇas, particularly the *Matsya* and *Vāyu,* when the capital city of the Pāṇḍavas, i.e. Hastināpur, is completely destroyed by a heavy flood in the Gaṅgā, Nicakṣu, the fifth king after Parīkṣit, who ascended the throne of Hastināpur just after the Pāṇḍavas won the battle of Kurukṣetra, will shift his capital to Kauśāmbī, located some 50 km from the modern city of Allahabad. Could archaeology establish the truth of this statement? Probably yes, probably no. Yes, because there is some significant circumstantial evidence; no, because there is no direct evidence.

Hastinapur got Flooded and then Deserted

There is a clear-cut archaeological evidence of a massive flood in the Gaṅgā destroying most of the settlement of the PG Ware people, so much so that the place was not occupied by human beings for quite sometime, but for how long a period, cannot be stated precisely, may be for a century or two, as the C-14 dates of the P.G. Ware levels and the NBP Ware levels suggest. Could it then not be the Purāṇic Flood? If yes, then what was the magnitude of the flood attested to at Hastināpur?

Judging The Magnitudes of The Hastināpur Flood

Sarvashri M.C. Joshi, J.P. Joshi and U. Thakur have questioned the validity of the evidence of the flood at Hastināpur by saying that it was just a 'scar' causing

only a limited damage to the site. Shri M.C. Joshi argues that sites located immediately on the bank of rivers, particularly major rivers, keep on experiencing the pressure of such floods and, therefore, there is hardly any basis to identify the Hastināpur flood with the flood mentioned in the Purāṇas. We, however, strike a note of disagreement with these scholars on this issue. Our observations are as follows:

That the PG Ware settlement was found badly destroyed by a flood in the Gaṅgā at a time when culture had not shown signs of any phenomenal decay is amply clear from the archaeological remains. That the flood was unprecedented, although it might have spared some houses, is proved much more by the aftermath of this tragedy: the complete desertion of the site for a considerable time; the site was occupied only after a definite break in the occupation, as the published report of the Hastināpur excavations shows. Had it been an ordinary flood the people would not have completely deserted the place. (We have the evidence of six repeated floods and yet continuation of the settlement, coming from Mohenjodaro). And who were these new occupants? Not all of them were the same PG Ware using people. Probably, there were a new set of people also. They were the users of the NBP Ware in place of PG Ware. Clearly, the time lag between the flood and the reoccupation of the site was considerable, about a century or two. The obvious conclusion is that the flood that brought about this calamity was of no small magnitude. Contrary to the views of Shri M.C. Joshi, it was not one of those yearly or once-in-ten years flood which causes limited and repairable destructions and is often met with at practically every site located on the bank of a major river.

Why the Capital was Shifted to Kausambi

Since the destruction of Hastināpur appears to have been unprecedented, it may be easily presumed that the faith of the people got completely shaken. And it is just possible that the uprooted people themselves told their king to move to some safer place, far away from this more or less inhabitable, inhospitable and ill-fated site. But then where were they to move? Who would allow them to settle down in his territory, and that too along with their king? Professor Lal points out to us in personal communications that since most of the eastern region was the stronghold of the Pañcāla kings, both of the northern and the southern regions, there was absolutely no possibility for them to move to Ahichāchhatrā or Śrāvastī or Kāmpila or any other site upto the present day Farukhabad-Kanpur region. The only politically *terra incognita* (virgin land) lying immediately beyond it which could offer in the eighth century BC the kind of fertile land and hospitable climate they were enjoying at Hastināpur was of Kauśāmbī. During this period Kauśāmbī's political importance, it may be pointed out, was practically nil; it emerged as a state capable of influencing

neighbours and standing against them only in the seventh century BC when India witnessed the rise of the Sixteen Mahājanapadas.

That the Purāṇas preserved the oral traditions of the Mahābhārata and later history, is amply proved from several genealogical tables they offer, and we need hardly go into these details here, scholars like Pargiter and Raychaudhuri have already dealt with this aspect of the problem in their several publications. Therefore, the vital question for the archaeologists has been to show, if they can, the archaeological basis of this tradition. And to our mind, the evidence of the flood attested to at Hastināpur is not an entirely unconvincing evidence—it is preserved at the mound in the form of a very thick deposit of mud and slush and, sand and clay, showing obvious cross-bedding and dove-tailing of layers; and also in the ancient bed of the Gaṅgā in the form of a huge conglomerate of washed-out habitational material, as deep borings made by Professor Lal have clearly shown. It was not just a 'flood-scar', as some scholars believe.

Judging the Nature and Significance of the Kauśāmbī PG Ware

Besides the 'flood', the most important evidence cited by Professor Lal is the occurrence of a kind of PG Ware at Kauśāmbī. At Kauśāmbī, from the levels immediately preceding the NBP Ware complex, there is a thick deposite of a Grey Ware characterized by a very rudimentary type of painting, one simple band hurriedly executed on the outer-side of the rim of a pot. The artist used a watery thin black pigment which trickled down the profile in a very awkward manner, exhibiting an utter lack of control over the brush and/or utter disregard for the quality of production. Professor Lal, therefore, once called it a *degenerate* kind of PG Ware and christened it as 'Kauśāmbī Painted Grey Ware'. The two remarks put together would imply, according to him, a very late date for this ware, almost at the very end of the PG Ware period. If this is so, it fits into his thesis very well. It may clearly show the continuance of a pottery tradition of the Mahābhārata period long after the Mahābhārata war at a place where political power of the Pāṇḍava rulers continued to exist. But then a question may be raised in this connection.

Why should we take the Kauśāmbī PG Ware as generically related with the PG Ware of Hastināpur when the two wares appear to be somewhat dissimilar not only in painted designs (the trickling down of the paint and the marks left by them is not commonly found at Hastināpur even in the pottery of its latest levels) but also in typology, for example, in the rejection of certain forms from active use at Kauśāmbī, such as the Straight Sided Bowl, a most typical P.G. Ware type of Hastināpur?

That the two wares may have been generically related is indicated, according to Professor Lal, by two factors, but according to us, this is so only circumstantially: (a) the continuance of the tradition of executing paintings on the grey ware pots, whatever may have been the designs (not a very sound argument, in any case), and (b) the continuance of the majority of the P.G. Ware types, such as the large open-dish (*thālī*) and rounded bowls (*kaṭorā*), big and small, both. The absence of the straight sided bowl at Kauśāmbī, according to Professor Lal, may not create any great concern since even at Hastināpur, as the published report clearly shows, this type was popular only in the lower levels; the upper levels have yielded only a few examples of this type. It means that there was a gradual decline in the popularity of this type even at Hastinapur. That its popularity might have completely died out by the time the PG Ware reached Kauśāmbī is, therefore, not altogether impossible if we agree with the hypothesis of Professor Lal. It is, in a sense, implied in the very process of change the PG Ware was undergoing while moving from the east to the west and from early levels to the late levels. Kauśāmbī is considered by Professor Lal as the easternmost metropolitan centre in the Gaṅgā basin where the PG Ware was in use; it has not been found either at Rājaghat in Vārāṇasī or Pāṭalīputra in Patna or even Vaiśālī (our close observation clearly shows that the Vaiśālī grey sherds are not the PG Ware sherds). However, explorations conducted in the Kanpur-Fatehpur region by Shri L.M. Wahal of the Archaeological Survey of India clearly show that the classical or *deluxe* PG Ware has not been found beyond a site known as Galāthā on the confluence of the River Pāṇḍu and River Gaṅgā in District Fatehpur and, therefore, the claim of Kauśāmbī as the easternmost site of the PG Ware is only tentative. Obviously, only further explorations in the region between Fatehpur and Allahabad can decide the issue one way or the other.

It is, however, possible that within the process of change the process of gradual transformation of pottery types into certain modified forms and the process of selection and rejection of the existing types and painted designs for future use was constantly going on. It means that while, on the one hand, the quality of the PG Ware was declining in terms of decorative designs, etc., (the directional changes were from the preference for a painted ware to a comparatively plain ware) on the other hand, it gradually started conforming to the forms of another *deluxe* ware (which started replacing the PG Ware throughout the lattter's area of popularity), the NBP Ware. It is significant to note that this process of transformation continued with the grey ware even after the period of the NBP Ware, since we keep on getting the plain grey ware bowls and dishes in the levels of the last quarter of the first millennium BC. But it is not the same thing as proposed by Professor Lal.

Kausambi PG Ware and Puranic tradition

The correction between the actual shifting of the capital from Hastināpur to Kauśāmbī, as mentioned in the Purāṇic traditions, which may not have taken more than a couple of years on the part of Nicakṣu, and the changes claimed to have occurred in an earthen ware, which is a common man's industry, may be taken with a pinch of salt. One would rather expect practically at the PG Ware types occurring in the latest level of Hastināpur period II (PGW period) in the earliest level of Kauśāmbī period II (PGW period) if the suggested correlation has to establish itself firmly. Since this does not seem to be the actual situation, the vital question that follows is: who introduced the so-called Kauśāmbī PG Ware tradition at Kauśāmbī? At the present state of our knowledge, there cannot be any categorical answer. But the possibility that they belonged to a PGW Cognate group cannot be completely ruled out. Professor Lal, however, does not agree with this conclusion; according to him the Kauśāmbī PG Ware belongs to the Hastināpur PG Ware group, the difference, which exists between the examples of the two groups has to be seen in the light of changes already occurring at Hastināpur. But we contend that it is not very clear from his report of the excavations published in *Ancient India* No. 10–11. A re-examination of the excavated pottery is, therefore, absolutely essential. He agrees with it. We also suggest that more detailed work be done on the so-called Kauśāmbī PG Ware.

There is another line of argument also which Professor K.K. Sinha wants me to present here. The Purāṇic reference seems to have been indirectly supported by Kauśāmbī's evidence of a slightly different kind. Extensive excavations by Professor G.R. Sharma clearly show that the emergence of Kauśāmbī as a potential region for future development (as a centre of great economic and political power) was realized much earlier than the sixth century BC or the times of the Buddha and King Udayana, since there is a thick habitational deposit of pre-NBP Ware antiquities at the site. It is possible that although its potentiality was realized very early, it was exploited to a great extent only by some newcomers (from Hastināpur?) and the incident was so much alive in the oral traditions that the Purānas incorporated it and symbolized it in the episode in which King Nicakṣu and his uprooted people from Hastināpur have been shown settling down at Kauśāmbī.

The historians who would ask the archaeologists to give 'much more solid proof' for the correlation between the traditional accounts and the material remains will be, we are afraid, somewhat disappointed. It is not because the archaeologists are incapable of finding out such a proof but because such a proof is never expected to have existed—they cannot discover the coffin of King Nicakṣu since cremation was the mode of the disposal of the dead, even for the kings, in those days, and they cannot unearth a contemporary written

record mentioning all these historical and geophysical events since writing itself was unknown in India during the post-Harappan and pre-Mauryan period. They cannot also be expected to produce a stone statue of this king because during the period mentioned above the technique of making sculpture in stone of any significant proportions did not exist, at least on the present showing, and if there was any wooden sculpture, it must have perished long before as was probably the case with other wooden sculptures and structures in the Indo-Gangetic valley. For similar reasons, we also do not expect any wooden palace of the king or any other kind of monumental structure of the contemporary period. What nature could not preserve, the archaeologists should not be expected to produce.

Urban vis-à-vis Rural Character of the Culture of the Mahābhārata Period

In this context it has sometimes been said, particularly by Shri M.C. Joshi, that the culture represented by the PG Ware and its associated finds represent the picture of a basically rural society and not urban, while the settlements and society of the Mahābhārata period was largely urban. Obviously, the two do not go together. In this connection the archaeological evidence is very clear: the earlier part of the statement is correct but the latter part may not be correct. Why? The answer is simple. Archaeologically speaking, after the Harappans the First Indian Cities were established not before the Mauryan period, since in terms of monumental structures, use of baked bricks, planned settlements, and above all, the writing, are conspicuous by their absence in the pre-Mauryan and post-Harappan levels. Then, should we take the date of the original Mahābhārata, which is also the actual date of the War, as Mauryan or post-Mauryan? No one would do that for several well-known reasons. Clearly enough, the Mahābhārata period was represented by the same cultural *form* as the Vedic, which means 'rural'. Further, as a corollary, the Mahābhārata kings and heroes were no better than the pre-Mahābhārata (Vedic) kings and heroes, either in their social status or in excellence in warfare. That is why Professor Lal and B. K. Thapar have always considered the Mahābhārata problem within the framework of the larger problem, the Aryan. Therefore, let us not take the remarks of Shri J.P. Joshi seriously that 'we can hardly say anything positive regarding the existence of the culture of the Mahābhārata period'. Whatever may have been the period or the periods or the *Mahābhārata* there were some human beings and, therefore, there was some culture, rural or urban is a different matter, that is always determined in the light of our own definition of 'rural' and 'urban', which is not as well settled as is often imagined.

In any case, looking at it from any angle, the so-called urbanity of the Mahābhārata appears to be a later interpolation. It is also clear from archaeology that many of the details of the warfare and the weapons of war could not have been as old as 1000 BC or 1500 BC.

Urbanity and Civilization

But lest we are misunderstood, we would like to make it clear that from our point of view, urbanity and civilization are not synonyms. The Vedic Culture was the culture of a highly civilized people well-versed in metal technology and warfare as also in philosophy and literature but it, in itself, will not mean that they were well-versed in establishing cities and living in a non-rural context. Urbanism is a particular socio-economic reality based on division of labour and occupational specialization, an evolved administrative system, monumental structures, widespread trade connections, etc., which certainly did not characterize the PG Ware sites.

Directional changes in the PG Ware

In fact what intrigues us much more is that this is another aspect of the story. How is it that the PG Ware (if we leave Kauśāmbī out of the present consideration because opinions may differ on its inclusion in the family of the Painted Grey Ware) appears on the scene of Indian potteries in the most flowering stage and also disappears in the same stage (as Śrāvastī, Ataranjīkherā, and other places where it overlaps with the NBP Ware and then soon ends its history, its shapes, fabric and painted designs remain the same, that of the *deluxe* type)? The stages of evolution and devolution in the ware have as yet not been fully worked out, although Professor Lal informs us that it is not true: most of the pots in the latest levels of the PG Ware at Hastināpur are degenerate ones, marked only by a single black band around the rim, a feature comparable with the Kauśāmbī examples. Obviously, according to him, changes in pottery were taking place in time and space both, only a fresh look is needed to make a detailed study of this phenomenon. Similarly, as claimed by Professor Lal, changes in 'preferences' of certain pot types were also taking place, at least at Hastināpur. To us, however, it is not clearly borne out from his published report. A more detailed analysis of the ware is absolutely essential.

Chronology of PG Ware: Some Problems

A word about the chronology of the PG Ware in the light of C-14 dates is essential. Two things are said about it: firstly, that except Atranjīkherā no other site has yielded a date earlier than 800 BC, and secondly, that most of the dates fall between 800 BC and 400 BC. Then it is also said that as far as

Hastināpur is concerned its dates are still later, none is earlier than 550 BC±100 years. In this connection our discussions with Professor Lal led us to deduce the following. To begin with, the C-14 dates obtained on the samples from Hastināpur are not cent-per-cent reliable. Why? Professor Lal explains it as follows:

If one goes through the remarks about the samples as given by Dr D.P. Agrawal and Sheila Kusumgar who carried out the C-14 tests on them, it becomes clear that except for one, all were likely to have been contaminated since all of them contained rootlets of grass, etc., which were, of course, physically picked up or chemically destroyed. Nevertheless, if they had already affected the samples in antiquity these precautions could not have helped the matter at all. This is proved by another kind of evidence also. That dates obtained on samples from Hastināpur, belonging even to the post-P.G. Ware levels, are younger by about 200 years when compared with the dates of roughly contemporary (observation based on pottery analysis) levels elsewhere in the region, e.g., at Ahichchhatrā, Śrāvastī Kauśāmbī, Ropar and Ālamgīrpur. In this connection, it appears necessary to inform the readers as to why this tragedy, if it was really so, occurred with the samples from Hastināpur? In 1951–52 when Hastināpur was being excavated, C-14 technique had not developed. Thus, when after 15 years of the excavations it was realised that let us collect a few samples from the site and put them to the C-14 test, the trenches were taken in an area much nearer the old exposed trenches than ordinarily recommended. It was, possibly, a case of bad sampling.

It has now been widely recognised that all is not well with C-14 dates falling between 300 BC and 3000 BC. They appear to be younger by a certain number of years by a fixed rate according to the scientists working in a museum laboratory of USA, called MASCA. As we go back in time, the quantum increases, upto 500 years or more, to be added to the C-14 dates. According to this correction, 1025±100 BC date of the P.G. Ware level of Ataranjīkherā will become 1155±100 BC, and 820±100 BC of Noh will become 900—±100 BC. If we agree with this correction (MASCA) the early phase of PG Ware may fall between 1200 and 900 BC. But let it be clearly understood that experiments in correcting the errors of C-14 are still going on at several places by the scientists of different disciplines and all of them have not accepted the validity of MASCA Corrections based on tree-ring dating method, called 'dendrochronology'. Still no one has ever said that additions have not to be made to the C-14 dates. In this connection a note by D.P. Agrawal in *Purātattva* No. 7 (1974) may be seen. On the whole, therefore, 1000 BC to 800 BC may still be taken only as a probable date for the early phase of the PG Ware, although it is younger by two to three hundred years of the date suggested by Professor Lal and higher

C[14] DATES OF PG WARE SITES

Sites	C[14] dates, based on half-life=5730 yrs. in years BC		Sites	C[14] dates, based on half-life-5730 yrs. in years BC	
Noh	TF-1144,	490± 90		TF-83,	335±115
(Rajasthan)	UCLA-703A,	605±260		TF-112,	375±100
	TF-993,	725±150	Hastināpur	TF-90,	390±115
	UCLA-703B,	820±225	(U.P.)	TF-85,	505±130
				TF-91,	570±125
			Atranjīkherā	TF-291,	535±100
			(U.P.)	TF-191,	1025±100

The C[14] dates of the PG Ware sites (courtesy D.P. Agrawal and Sheila Kusumgar).

by the same number of years from the date suggested by Dr D.P. Agrawal and Sheila Kusumgar in the context of Hastinapur. In this context Shri J.P. Joshi's excavations at Bhagawānpurā near Kurukṣetra and Dr U.V. Singh's explorations at Kurukṣetra appear to be extremely significant: they show, as Shri Joshi very kindly informs us that in its lowest levels PG Ware overlaps with the Late Harappan deposit which could not be later than 1300–1100 BC bracket because it is of the pre-Iron Age.

As far as the date of the Painted Grey Ware suggested here is concerned a few more factors may also be taken into account. Firstly, as said earlier, there is every likelihood that this ware emerged almost along with the emergence of iron technology in India. In fact, Dr G.G. Majumdar, who has conducted a number of scientific investigations on this ware in his laboratory at the Deccan College, Poona, informs us that in the very process of producing the Painted Grey Ware, the knowledge of iron technology is pre-supposed because it is the iron content in the clay which alone produced the type of colour the ware assumed while undergoing baking in the kiln. And iron technology came to India, as said earlier also, only around 1000 BC.

Secondly, the Painted Grey Ware overlaps with succeeding N.B.P. Ware at several sites, notably, Śrāvastī and Ataranjīkherā. The question is at what point of time the two wares overlapped? At the present state of our knowledge, this seems to have happened round about 500 BC–450 BC. Since at several places, the thickness of the PG Ware deposit below this level is about two to three metres. It is not impossible, on a very rough calculation of course, that it had taken 400 to 500 years to get this regular deposit, layer after layer, without any major disturbance. It also brings us to 1000 BC date, but, admittedly on a somewhat subjective calculation.

Archaeology And The Pauravas

In this context one more objection has been raised by Shri M.C. Joshi. Traditions ascribe the establishment of Hastināpur to King Hastin, also a Paurava, like Duryodhana, the main opponent of the Pāṇḍavas. Obviously, the culture associated with the Pāṇḍavas cannot be different from the culture which Hastin enjoyed. However, the cultural sequence of Hastināpur does not show it: the earliest occupation belonged to what the archaeologists call Ochre Coloured Pottery Culture, while the culture following it is called PG Ware, ascribed to the Pāṇḍavas. If Hastin founded the town he should be taken, on the present showing, a king of the O.C. Pottery times and not the PG Ware times. How could two members of the same family belong to two different cultures widely separated from each other, asks Shri Joshi. On the face of it, Shri Joshi's objection is absolutely valid but then there is a snag. This observation presupposes a historical process which is not *generally* correct. In history, there are innumerable instances to show that the so-called founders of the important cities were only rarely the first settlers of the sites—take the case of Jaipur or Jodhpur or Śahjahānapur or Tuglaqābād or any other city of this category and dig below the occupational levels, you will usually find the remains of several other cultures preceding the ones to which their founders, who used their names to christen the sites, belonged. The nature of deposit of the O.C. Pottery Culture at Hastināpur clearly shows that the first settlement at the site was of a miserable kind, may be there were only the hutments. It was also, as the evidence shows, destroyed by floods or by severe dust storms, if we accept the theory of Dr B.B. Lal, formerly Chief Chemist, Archaeological Survey of India. Then there occurred a break in the habitation. The PG Ware people probably occupied this place having only one consideration in mind: it was a place on the bank of a major river which was higher, because of the pre-existing debris of the earlier settlement, than the surrounding area. They may not at all have known anything about their predecessors. Obviously, King Hastin could very well take the credit of establishing an entirely new township and name it after his own name during the PG Ware period in spite of the fact that below his feet laid buried a thick deposit of yellow clay mixed with tiny pieces (as the evidence is) of Ochre Coloured Pottery.

The Claim of the Late Harappa-OCP Complex

Shri Amarendra Nath is of the opinion that while considering the claim of the Painted Grey Ware Culture as the culture of the Mahābhārata period we should not forget that it is based on the preference that Professor Lal has given to the views of Sanskritists like Pargiter in regard to the date of the Mahābhārata War,

i.e., 10th century BC, over the views of astronomers like K.C. Varma and S.B. Roy which place this date in the 15th Century BC. He accepts the latter view and then says that the PG Ware's claim as the culture of the original Mahābhārata period be discarded since PG Ware's antiquity cannot be pushed back to 15th century BC. He offers an alternative: the Late Harappa OCP Complex. This complex belongs to the period in question and its remains have been found in plenty in the Indo-Gangetic divide, the actual locale of the Mahābhārata story. Prŏfessor Lal, however, raises an objection: since the O.C.P. has not been found at most of the Mahābhārata sites, except Hastināpur, it cannot make any claim whatsoever. The same applies to Late Harappan culture since it has also not been found at most of the Mahābhārata associated sites, except Kurukṣetra. Amarendra Nath, however, questions the validity of the approach of Professor Lal by saying that the equation of one people one archaeological culture is not a proper equation—regional differences in the material culture of a single people (ethnically and historically speaking) is the reality. As far as the Mahābhārata period is concerned, there were certainly several groups of people inhabiting the Indo-Gangetic divide, the text itself shows that. Archaeological discoveries in recent years show that in Harayana, Late Harappa Culture, and in western U.P. and eastern Punjab the O.C.P. culture predominated the scene during the second millennium BC. Therefore, their claim as the cultures of the Mahābhārata period is more justified.

It may, however, be pointed out that this discussion is futile since the basic question is not whether this archaeological culture belongs to the Mahābhārata period or that archaeological culture; the basic question is: what date should we assign to the Mahābhārata War? He is right if it is agreed upon that 15th century BC is the date of the War but he will be wrong if it is held that the date of the War is the 10th century BC. He forgets the fact that Professor Lal has first tried to establish the date of the War by several types of calculations and then he went to select an archaeological culture of the Indo-Gangetic divide which belongs to that date, he did not do the other way round. Obviously, if Shri Amarendra Nath accepts 15th century BC as the date of the ware, he may be right, but then Professor Lal does not accept it, and he has given his own reasons for that. If we agree with Shri Amarendra Nath, then we may also have the choice of agreeing with those who take *c.* 3000 BC as the date of the War and in that case only the Harappa Culture can have the proud privilege of becoming the culture of the Mahābhārata period. Professor Lal's methodology cannot be challenged on the plea that 'one ware one people' equation is not correct because in the absence of anthropological and linguistic data what criterion we may evolve to identify a homogeneous group of people? For pre-literate cultures, pottery has been accepted as the common denominator, howsoever apologetically it might have been done. As far as the Copper Hoard tools and

weapons are concerned, let it be made clear, that firstly, these tools have neither been found at Kurukṣetra nor at Hastināpur and, secondly, no one has ever demonstrated that typologically, the implements of the Hoards and those of the Mahābhārata War are identical.

Summary and Conclusions

While going through the press-reports, it occurred to us that archaeological evidence as well as the C-14 dates have often been used and abused not only by the historians, astronomers and Sanskritists but also by some archaeologists. The result is that an interested lay-reader often finds himself at his wits' end. It was also realized that much of this misunderstanding is due to three factors: (i) for archaeologists, pottery is the ABC of their science but evidence of pottery does not appear to be as conclusive at the present state of our knowledge as it has been made out by Professor B.B. Lal, particularly in the context of Kauśāmbī PG Ware, (ii) the evidence of flood deposits at the end of habitational deposits of the PG Ware people at Hastināpur and its correlation with the Purāṇic data has also been interpreted differently by different authors, and (iii) because of certain difficulties in the calibration of the C-14 dates and also the exact location of the carbon samples in relation to the stratigraphy of some of the PG Ware sites, even the evidence of C-14 dates has not been properly appreciated. There are some specific points on which even Dr D.P. Agrawal and Professor B.B. Lal differ.

These difficulties cannot be fully resolved at the present state of our knowledge. As said earlier, the cart should not be put before the horse, archaeology on its own can neither decide the date of the Mahābhārata War nor prove the authenticity of several other incidents occurring in the Mahābhārata. These things will have to be decided by non-archaeological methods first and then we may try to find some support from archaeology, and not vice versa. Professor Lal has been quite conscious of it and, therefore, he laboured very hard in establishing the date of the War first on the basis of the Purāṇic data and then tried to see what archaeology has to say on this subject. Similarly, he delved into the literature first to find out the reference of the flood at Hastināpura before passing judgement over the magnitude and the implication of the flood-deposits at Hastināpura. But I am afraid, he will have to work harder along with Professor G.R. Sharma over the nature of the Kauśāmbī PG Ware and its proposed relationship with the PG Ware of Hastināpura. As far as the C-14 dates in respect of the PG Ware Culture are concerned, it is better to wait and watch for a few more dates from sites near Kurukṣetra, the site of the Mahābhārata War, because of one very significant fact which is emerging from the current excavations at Kurukṣetra and Bhagawanpura the PG Ware has been found

overlapping with the Late Harappan Ware. It appears, purely on archaeological grounds (the C-14 dates are not available) that the latter ware ended sometimes in the second half of the second millennium BC. If it is so, the beginning of the PG Ware may also go back to the same period. To interpolate the C-14 dates of the PG Ware levels of Ataranjīkherā or Sonkh or Noh (we need not enter into the academic controversy on the C-14 dates as obtained on the samples from Hastināpura since there are some strong reasons for arguments one way or the other with both Professor Lal and Dr Agrawal) into the chronology of the Kurukṣetra War is not absolutely foolproof—no ware shall ever give one and the same date at all the sites of its occurrence since wares travel with men and men do take some time to travel from one place to another. On the present showing it appears that the epicentre of this ware was located in the Sarasvatī Valley of the Bikaner region from where it travelled towards the east, crossing Kurukṣetra, Hastināpura, Mathurā and Ahichchhatrā and reaching the Nepal Tarai at Tilaurākot. If this is true, then we may expect the date of the PG Ware at Kurukṣetra slightly earlier than any of the dates obtained so far, since all the dated sites are located far away towards the east from the place of the Mahābhārata War; how much earlier than the Noh-date, we do not know at the moment. We will, however, not be surprised if the PG Ware in the Sarasvatī basin, at sites like Bhagwānpurā, is dated to the 14th or 13th century BC in a pre-iron context. It means, the PG Ware people adopted the iron technology during the middle stage of their technological development, any time between the 12th and 10th century BC, allowing a couple of centuries for the early stage. Thus, if iron was used in the Mahābhārata War, as appears to be the case since iron as 'kṛṣṇa ayasa' definitely appeared in the pre-epic Brāhmaṇa literature, then the war is likely to have been fought within the time bracket of ± 100 years 1200–1000 BC. Archaeologically, we may not be able to say more than this at present.

Notes and References

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3. *Mahābhārata*, Critical Edition, I, 56, 33.

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5. Thapar, B.K., 'The Aryans: A Reappraisal of the Problems', *ICWTC*, pp. 147–64.

PART IV

The Early Historic Period: The Ashokan Rock Edict at Srinivaspuri/Bahapur

A Tale of Two Pillars

Upinder Singh

Northern Black Polished Ware Levels at the Purana Qila

What do we know about the life of ordinary people in the Delhi area during the early historical period? To answer this question, we turn to the archaeological evidence from NBPW sites. The NBPW is a fine pottery, made of well-levigated clay, generally on a fast wheel. It is thin in fabric and has a dark surface and a strikingly lustrous (almost metallic) sheen. The shapes include dishes, bowls, lids, and carinated *handis* (cooking pots). Like the PGW, NBPW is a *de luxe* pottery, and forms a small percentage of the total pottery yield from levels in which it is found.[1]

It needs to be emphasized that there is no neat 'match' or 'fit' between the pottery-based 'cultures' of archaeology and the dynastic 'periods' of political history. The NBPW culture can be placed within the broad time bracket of the seventh/sixth century BC to the first century BC. The Mauryan periods stretches from the fourth to the second centuries BC. There is thus a partial overlap between the NBPW culture and the Mauryan phase.

Northern Black Polished Ware has been found at several places in and around Delhi, but we have detailed information only from the Purana Qila. These details help in reconstructing every-day life during this phase. The NBPW levels at the Purana Qila indicate that people lived in houses made of both mud-bricks and kiln-made bricks. A burnt wattle-and-daub structure and a series of hearths were found. Houses had drains made of both rectangular and wedge-shaped bricks. Terracotta ring wells (roughly 75 cm in diameter) were other significant finds of the NBPW level. The technique of making these wells, which may have functioned as soak-pits for waste water, was as follows: first, an oblong pit of the required depth, with a narrow rounded end, was

Excerpted from Upinder Singh, *Ancient Delhi*, Oxford University Press, New Delhi, 1999, pp. 48–55.

dug in the ground. Terracotta rings were then fitted into it, one on top of the other. The pit was then filled to the brim with rubble and earth.

Terracotta figurines of humans and animals, the fragment of a sculpted ring stone (associated with the worship of the mother goddess), a terracotta piece depicting a horse and armoured rider, a clay sealing with motifs, small rings and an agate disc were also found at the Purana Qila. One of the NBPW dishes bore on its inner base the stamped figure of an elephant. Punch-marked and cast copper coins make their appearance. A terracotta seal which seems to have the inscription 'Svatirakhitasa' (of or belonging to Svatirakhita) and another with 'Seyankarasa' (of or belonging to Seyankara)—were discovered. Who Svatirakhita and Seyankara were, we do not know.

Ashokan Edicts in Delhi

The Mauryan emperor Ashoka had a series of edicts on *dhamma* (the Prakrit form of the Sanskrit word *dharma*) engraved on rocks and pillars in different parts of his empire. This *dhamma* consisted of certain ethical ideals inspired by, but not identical to, those emphasized by early Buddhism.

Most of Ashoka's inscriptions are written in the Prakrit language (akin to Sanskrit and regarded as closer to the everyday speech of the time) and Brahmi script. In the north-western part of his empire, Ashoka used the Kharoshthi script to spread his message. Certain Greek and Aramaic inscriptions, some bilingual and bi-scriptual, have also been found in these parts. Ashoka's inscriptions have a special importance because of their remarkable content and for what they tell us about the king's ideas. They are among the oldest deciphered inscriptions in the Indian subcontinent. Between the decline of the Harappan civilization and the Mauryan period, there are *no* examples of writing found so far in India.[2] What is likely is that people wrote on perishable material such as palm leaves or bark, and that such specimens of writing have simply not survived the ravages of time. When Ashoka Maurya decided to have his edicts inscribed on durable material—stone—he gave later ages the opportunity to read his message. He also left his signature (not literally of course) in places that formed part of his empire. As time passed, the script of the Ashokan inscriptions was forgotten. It was deciphered in 1837 by a scholar named James Prinsep.[3]

Today, there are three places in Delhi where Ashoka's edicts can be seen.[4] A version of Minor Rock Edict I is inscribed on a set of rocks situated at Bahapur, to the south of Srinivaspuri, in south Delhi.[5] There are also two Ashokan pillars in Delhi, one (known as the Delhi-Meerut pillar) on the Delhi Ridge opposite the entrance to Bara Hindu Rao hospital, near the University of Delhi campus, and the second (known as the Delhi–Topra pillar) at Firoz Shah Kotla. The

pillars are tall shafts sculpted out of sandstone. The Delhi-Meerut pillar stands just over 32 feet high while the height of the Delhi–Topra pilar is 42 feet 7 inches. Judging from the capitals of Ashokan pillars found elsewhere, these two pillars were in all likelihood once surmounted by an inverted lotus supporting one or more animals sculpted in the round.

There is an important difference between the edict-bearing rocks and the two pillar edicts. The rock edict is *in situ*, i.e. in the original place where Ashoka had it inscribed, while the two pillars are not. Both were brought to Delhi, one from near Meerut (in Uttar Pradesh) and the other from Topra (near Ambala in Haryana) due to the enthusiasm of a medieval Sultan of Delhi, Firuz Shah Tughluq (1351–88 AD).

The sites selected for the inscribing of Ashoka's edicts were in some cases important places on the trade routes of the time, in other places that had some connection with the Buddha or Buddhism. Some sites combined both these features. The rock edict at Bahapur seems to be connected with the *Uttarapatha*—the great trans-regional trade route of north India. The northern artery of this route which swept across the Gangetic plains, linking the northwestern parts of the subcontinent to the Gangetic delta, passed through Delhi. It is an important fact that a Mughal *kos minar* (similar to modern milestones on highways) was located at Bahapur, confirming that in medieval times a major trade route passed this way. The fact that Ashoka's rock edict is found near this spot suggests that this was an important route in ancient times as well.

There is another possibility that would explain the location of the rock edicts at Bahapur/Srinivaspuri. The rocks on which Ashoka's edict is inscribed lie at the base of a rocky stretch close to the temple of the goddess Kalka Devi (Kali). The present temple is a modern one, but is it possible (this is pure speculation!) that this place marks the site of an older shrine? If so, there may have been some additional point in Ashoka having his *dhamma* teachings with their emphasis on virtues such as *ahimsa* (non-injury) inscribed near a place where bloody sacrifices may have been performed to propitiate a fierce and powerful goddess.[6]

Versions of Ashoka's Minor Rock Edict I have been found at several places in northern, central, and southern India.[7] In the Bahapur/Srinivaspuri version of the edict (which is shorter than the other versions), Ashoka tells us that he became a lay devotee of Buddhism (the word used is *upasaka*) two-and-a-half years ago, but that for a year he did not make much progress. After this, he had drawn closer to the Buddhist monastic order (*sangha*). Ashoka boasts that due to his efforts and exertions, gods and men had come to mingle in India (the word used for India is *Jambudvipa*). Ashoka points out that anybody, whether great and rich or humble and poor could follow *dhamma* and attain heaven. The edict tells us that this proclamation was being made so that the high and

low, rich and poor, could exert themselves in following *dhamma* and in order that people living beyond the king's borders could also learn about this matter.

. . . .

Notes and References

1. The name given to this pottery type is more than a little misleading. It has been found in north India (Uttar Pradesh, Bihar, Rajasthan), but also occurs in other parts of the country (Madhya Pradesh, Maharashtra, and Andhra Pradesh). And while the sheen of this pottery is striking, it is not the result of polishing.

2. It should be pointed out that the Harappan and Brahmi scripts are not related to each other in any way.

3. The remarkable James Prinsep came to India in 1819 as an assistant to the Assay Master of the Calcutta Mint and soon became a major figure in early-nineteenth-century Indian antiquarian studies. Prinsep was Secretary of the Asiatic Society in Calcutta between 1832 and 1838. The results of his historical, textual, inscriptional, and numismatic research appeared frequently in various volumes of the *Journal of the Asiatic Society of Bengal* and were published posthumously in a collection entitled *Indian Antiquities* (London, 1858). Prinsep's decipherment of Ashokan Brahmi in 1837 was the culmination of the efforts of various other scholars such as Charles Wilkins. Apart from his own prodigious scholarly output, Prinsep was a source of inspiration for many of his contemporaries. James Prinsep and Sir Alexander Cunningham shared a close association, which Cunningham speaks movingly of in the Introduction to the first volume of his *Reports*.

4. *See* Upinder Singh, *Ancient Delhi*, OUP, Delhi, 2006 (1999). p. 44.

5. The rock edict is close to the newly-built gigantic ISKCON temple on Raja Dhir Singh Marg, not far from Nehru Place.

6. Recently, an ugly concrete shelter has been built over the rock edict, an iron grill placed over the inscription for its protection, and the patch of land where the rocks lie enclosed by a stone wall. The fact of the matter is that this area serves both as a garbage dump and an open-air toilet for the villagers living nearby. This makes the experience of visiting the site not a very edifying one. A recent visit revealed the worst thing of all—that very little of the inscription survives beneath the iron grill. (Was this irretrievable damage inflicted during the course of the just-mentioned efforts to 'protect' and 'improve' the site?)

7. These occur at Ahraura in Uttar Pradesh; Sahasram in Bihar, Bairat in Rajasthan; Rupnath, Gujjara, and Panguraria in Madhya Pradesh; Erragudi and Rajula-Mandagiri in Andhra Pradesh; and Brahmagiri, Gavimath, Maski, Palkigundu, Siddapura, Nittur, and Udegolam in Karnataka.

A Newly Discovered Inscription of Asoka at Bahapur, Delhi

M.C. Joshi and B.M. Pande

THE INSCRIPTION UNDER NOTICE IS ENGRAVED ON AN OUTCROP OF THE ARAVALLIS TO the south-east of Delhi in a colony now being developed on the south of Srinivasapuri, a government residential colony on the Ring Road (South). The inscription is within the village limits of Bahapur,[1] west of the modern Kalkajee Temple.

The inscription was noticed by Shri Jang Bahadur Singh, a contractor of Delhi, who came upon the inscribed rock when it was about to be blasted away for the development of a residential colony. The present writers visited the findspot of the inscription in the company of Shri Singh on 23rd March, 1966, and were able to identify the inscription as one of the Minor Rock Edicts of Aśoka (*c.* 273–232 BC).

The epigraph is engraved on a slightly tilted rock-face and the area covered by the writing measures about 75 cm in maximum length and 76 cm in height. The lines are of varying length, each longer than the preceding one, till the seventh line, 75 cm in length, is reached, after which they start getting progressively shorter. The inscription, thus, presents a roughly oval outline. Most of the letters are not very carefully engraved, and the scribble has also not been able to maintain a strict horizontality in the lines. An *akṣara* is, on an average, about 5 cm in height. The spacing between the letters and the words is also not always uniform.

The inscription is badly damaged in the middle of the inscribed area and lines 6, 7, and 8 are mutilated towards the left.

The characters, which are in Aśokan Brāhmi, have a slightly elongated form and some letters have unusual shapes, e.g. *la* in *ālādhetave* (L. 7) resembling the English letter V; *ḍha* in *aḍhatiyāni* (L. 1) appears like *va* with a dot in the centre of a circle. It may not be wrong to hazard the guess that these unusual

Excerpted from *Journal of the Royal Asiatic Society of Great Britain and Ireland*, 1967, Parts 3–4, pp. 96–8.

shapes of the letters were either due to a novice scribe or the hard medium in which he could not properly work.

The inscription is a shorter version of Aśoka's Minor Rock Edicts. The language of this Edict may be classed as a *Prākṛita* dialect akin to those of the Delhi-Topra and Delhi-Meerut Pillar Edicts and the Minor Rock Edict at Bairat, perhaps reflecting to some extent the dialect of the ancient Kuru region.

Most of the dialectal peculiarities of this epigraph are already known from the other Minor Rock Edicts of Aśoka and particularly from the one at Bairat, which is somewhat nearer to this inscription in language and contents than the rest. Nevertheless, (see Text below), we may mention the total absence of *ṇa* (cf. *sāvane* in L. 7), substitution of *la* for *ra* (cf. *palakaṁte*, L. 2; *savachale*, L. 3; *aṁtalena*, L. 4; *ālādhetave*, L. 7; *uḍālā*, L. 8; and *cilathitike*, L.9), forms nearer to Sanskrit in case of certain words, viz. *mānusā* (L. 5, for *mānuṣā*), *mahatveneva* (L. 6, for *mahatvena eva*), *svage* (L. 7, for *svarge*). The letter *sa* is represented both as *ca* (*cake*, L. 6, for *sakyaṁ*) and *sa* (*sakā*, L. 7, for *sakyaḥ*) for the same word. In *uḍālā* (L. 8) *da* is replaced by *ḍa*, but in *khudake* L. 6) or *khudakā* (L. 8) *da* (for Sanskrit *dra*) has been retained.

The inscription, as stated above, represents the shorter version of the Minor Rock Edicts of Aśoka[2] and brings the total number of this class to 14. Such a large number of Minor Rock Edicts adds greater significance to them, and it is not unlikely that these were issued in more than one series, possibly commencing with Maski, Bairat, Gavimath and Palkigundu, and the present one, all characterized by the absence of the much-disputed sentence containing the figure 256. The second series was possibly initiated at Ahraura, where, with a view to giving the exact idea of proclamation, Aśoka refers to his tour of 256 days, which has been further clarified in the following words: 'This declaration (*has been made by me while I am*) on a tour (*of pilgrimage*) for 256 nights (i.e. days) since the relics of the Buddha ascended[3] (i.e. were caused to be installed by me on) the platform (*for worship*').[4] Perhaps this was followed by Gujarra. The third series seems to be represented by the Sasaram (Sahasram) and Rupnath, where there is a pointed reference to the installation of pillars for the purpose of engraving the writs connected with *Dhamma*. The remaining ones at Brahmagiri, Siddapur, Jatinga-Ramesvara, Rajula-Mandagiri, and Yerragudi were perhaps the last in the series to be issued, for, in all these versions, tenets of *Dhamma* which have come to be known as Minor rock Edict II have also been incorporated as the latter parts of the text.

Text (from estampages)

1. *Devanām piye a (a)hā sātilekāni aḍhatiyā[ni]*
2. *vasāni yam haka upāsake na (no) ca bāḍhaṁ palakaṁte [sā]tileke*

3. *savachale aṁha maye saghaṁ upayā [te] bāḍhaṁ ca me*
4. *palakaṁte etena aṁtalena [Jaṁ]būdīpasi [a]misā devehi*
5. *saṁta mānusā misā deve [hi] pa [la] kama ..... na ha (hi) esa*
6. *mahatveneva cake pāpotave khudake [na] palaka .....*
7. *svage sakā ālādhetave imāye a [thā] ya iyam [sā]vane .....*
8. *khudakāca uḍālāca palakamaṁ [tu] [aṁtā] pi ca jānaṁtu*
9. *cilaṭhitike palakame hota (tu) e [ṭha] ca athe vipula pi vaḍhisati*
10. *diyaḍhiyaṁpivaḍhisati.*

Translation

Devānaṁpiya (His Majesty) saith (thus). (It has been) more than two and a half years that I became a lay devotee, (but) I did not exert myself greatly (in the cause of *Dhamma*). It was more than a year after my joining the *saṁgha*, and I exerted myself greatly. (Consequently) I could unite with the gods the mortals (who had so far been) ununified with gods during this period in Jambudvīpa (India). (This is the outcome) of exertion. (And) it is not to be accomplished only by the men of importance, (but) even lowly-placed ones if they exert can attain heaven. For this purpose this proclamation (is being made) (so that) both the low and the high (poor and rich) may exert (in the cause of *Dhamma*) and (those living on and beyond the borders of my kingdom) may also know about this.

Let this exertion be ever-enduring and this objective will also be immensely increasing (certainly) to the extent of one-and-a-half fold.[5]

Notes and References

1. In earlier notices about the location of the inscription, the place was wrongly reported as Amarpuri on the basis of information supplied by the contractor and the local people. Cf. Survey of India sheet nos. 53 H/2 and 53 H/6, 1 inch = 1 mile (1928 and 1936).

2. The discovery of this inscription at a site almost in alignment with other ancient sites in the vicinity, stretching from Indraprastha (Purana Qila) to Tilpat—all of them situated on the banks of the Yamuna—suggests the existence of a highway in the pre-Christian era.

3. Very possibly these relics were enshrined at Sarnath, the nearest important Buddhist site from Ahraura. Aśoka's reference to the installation further suggests that the event must have become well known during the first part of his reign itself.

4. *Epigraphia Indica*, XXXVI, VI (April, 1966), 248.

5. The writers are grateful to Shri A. Ghosh, Director General of Archaeology in India, for having permitted them to edit the inscription and publish the results and also for guiding them in the preparation of the paper.

New Delhi Inscription of Asoka

D.C. Sircar

Sometime ago, the discovery of a new inscription of the Maurya emperor Aśoka[1] (*c.* 272–232 BC) at New Delhi was reported in the newspapers. It is described as engraved on a flat but tilted rock surface of the quartzitic outcrop of the Aravalli in the newly developing Amarpuri Colony to the south of Lajpat Nagar. The discovery resulted from clues supplied by Sardar Jang Bahadur Singh who is a building contractor of Delhi. The inscription was identified as an Aśokan epigraph by Shri M.C. Joshi and Shri B.M. Pande of the Archaeological Survey.[2] Dr. G.S. Gai, Chief Epigraphist, copied the record in September, 1966, and was good enough to send me two impressions for editing it in the *Epigraphia Indica*. I am thankful to him for his kindness.

The inscription under study is a version of Aśoka's Minor Rock Edict I which was so far known from copies discovered at no less than 13 places in different parts of India—(1) Sahasram in the Shahabad District of Bihar, (2) Ahraura in the Mirzapur District of Uttar Pradesh, (3–4) Rupnath in the Jabalpur District and Gujarra in the Datia District of Madhya Pradesh, (5) Bairat in the Jaipur Division of Rajasthan, (6–11) Maski, Gavimath and Palkigundu in the Raichur District, and Siddapura, Jatinga-Rameśvara and Brahmagiri in the Chitaldurg (Chitradurga) District of Mysore, and (12–13) Erragudi and Rajula-Mandagiri in the Kurnool District of Andhra Pradesh.

The New Delhi version is thus the fourteenth copy of the epigraphic record. Its discovery at New Delhi is interesting because, unlike the Delhi-Siwalik and Delhi-Meerut pillar inscriptions of Aśoka which were brought to Delhi from outside by Sulṭān Fīrūz Shāh (1351–88 AD) of the Tughluq dynasty, the Minor Rock Edict engraved on rock is *in situ*. This shows that there was a flourishing city in the vicinity of the inscription during Aśoka's time and that it was intended for the people of the said city. Considering the tradition about the ancient city of Indraprastha located near Delhi,[3] it appears that the Aśokan inscription

Excerpted from *Epigraphia Indica*, 38 (1969–70), pp. 1–4.

under study was meant for the citizens of ancient Indraprastha. The present inscription thus indirectly proves that Indraprastha was one of the flourishing cities during the Maurya age.

In the present record, the inscribed space is marked by a deeply incised vertical line (about 3 feet in length) at the right hand side, though it is difficult to say whether it was engraved before or after the incision of the edict. The engraving of the letters of the inscription is rather shallow compared to that of the vertical line, and the lines of writing are not at right angle to the said line. The lines of the inscription are again of different length and their beginning and end are by no means uniform. Lines 1–2 and 5 end quite close to the vertical line; but such does not appear to be the case with lines 3–4, etc. The writing covers an area about 2 feet in height and between 2 feet 5 inches and 1 foot 4 inches in width.

There are altogether ten lines of writing in the inscription, the preservation of which is unsatisfactory, some *aksharas* in most of the lines being totally rubbed off. Needless to say that, like the other versions of the edict, the present epigraph is written in the early Brāhmī script and the Prakrit language. It has, however, to be noted that the *aksharas* are not of uniform size and, in some cases, the letters and signs exhibit cursive forms; *e.g.*, *va* in *Devānaṁpiye* (line 1); *ha* in *hake* (line 2; cf. *mahatveneva* in line 6); the *e-mātrā* in *te* in *etena* (line 4); *la* in *ālādhetave* (line 7) and *uḍālā* (line 8); the *i-mātrā* in *ti* in *caḍhisati* (line 10); etc. The back of *d* is sometimes angular (cf. *Devānaṁpiye* in line 1 and *diyaḍhiyaṁ* in line 10) and sometimes roundish. There is no uniformity in the space between any two *aksharas*: cf. *khudakā cha uḍālā cha palakamaṁtu* (line 8) in which there is no extra space between *kā* and *cha* and between *lā* and *cha* while the space between *cha* and *u*, between *u* and *ḍā*, between *cha* and *pa* and between *maṁ* and *tu* is considerably wider than that between any other two *aksharas* in the record. This lack of uniformity puts us in some difficulty in conjecturing the number of lost *aksharas* in the damaged sections of the inscription. The orthographical and linguistic peculiarities exhibited by the inscription are also noticed in the other versions of the edict. The language of the edict is usually called the Māgadhī dialect of Prakrit speech.

As regards the draft of the inscription, it generally follows the Bairat version of the edict, but exhibits some variations. Interesting is the use of the word *hamaye* for Sanskrit *mayā*, 'by me', in line 3 in place of *mamayā* found in the Bairat version. We know that the Aśokan edicts use the words *me*, *maya*, *mama*, *mamī*, *mamiyā*, *mamīye*, *mamiyā*, *mamiyāye*, etc.; in the above sense. The word *mayā* seems to be also used in the present version in line 2. In place of *siyā* (Sanskrit *syāt*) and *hotu* (Sanskrit *bhavatu*) of the other versions, we have here *hotī* (line 9) which reminds us of *hoti* in the Siddapura version. Sanskrit *śakya* has been made *chake* in line 6 and *sakā (ke)* in line 7. The word *bāḍhim*

(lines 2 and 3) for Sanskrit *bāḍham* may be compared to *bāḍhi* in the Rupnath version of the edict (lines 1 and 2).

The well-known geographical name Jambu-dvīpa occurs in the inscription. In early Indian literature, this name is applied to 'the earth' as well as to the land between the sea in the south, east and west and the Himādri in the north. In the inscriptions of Aśoka; the name Jambu-dvīpa and the word *prithivī* appear to have been used to indicate the Maurya kingdom.[4]

Text (From inked impressions)

1. Devāna[m]piye ahā [|*] Sātilekāni [a]ḍhā [5]tiyāni ...
2. vasāni yam hake[6] upāsake [|*] No cha bāḍhim palakate ma[7] [|*] Sātileke
3. savachhale aṁ hamaye [saṁgha upayatā][8] bāḍhiṁ cha[9]
4. palakaṁte [|*] Etena aṁta[lena][10] bu-[dipa]si [ye a]m[i]s[a] dev[e]h[i][11]
5. saṁtaṁ manūs[a] mis[a] deve[hi][11] [/*] [Pa] .....[12] [esa].[13] [|*] [No cha] esā
6. mahatveneva cha[ke] pāpotave [|*] Khudake[na] p[i] pala ... ne.[14]
7. svage sakā[15] ālādhetave [|*] I[mā]ya a[ṭhāya] iyaṁ sā[va]ne [|*]
8. Khudakā cha uḍālā cha palakamaṁtu [/*].[16] [pi] cha [jā]naṁtu [|*]
9. Chilaṭhitike palaka[me] [ho]tī [|*] E.[17] cha aṭhe vipulaṁ pi vaḍhisati
10. diyaḍhiyaṁ pi vaḍhisati [|*]

Translation

The Beloved of the Gods says:

A little more than two years and a half have passed since I have been an *Upāsaka* (i.e., a lay follower of the Buddha).

But no vigorous exertion [in the cause of Dharma] was made by me [from the time of my initiation].

It is more than a year since I have been devoutly attached[18] to the Saṅgha (i.e. the Buddhist Church), that vigorous exertion has been made [by me].

Those men, who were unmingled with the gods in Jambu-dvīpa during the past age, have been mixed with the gods.[19]

[This is indeed the result of my exertion]. And this [result] is not to be achieved [only] by the people of superior position.

Even a poor man, who is zealous [in the cause of Dharma], is capable of attaining the [great] heaven.

This declaration is for the [following] purpose. Let [both] the big and the small exert themselves [in the cause of Dharma].

And let even the *Antas* (people of the bordering States) know [about the good results of exertion in the cause of Dharma].

And let exertion [in the cause of dharma] be everlasting. And this matter (i.e. exertion in the cause of Dharma) among the people will increase enormously; it will increase even to one and half times.

Notes and References

1. Macron over *e* and *o* has not been used in this paper.

2. When the present paper was going through the press, an article entitled 'A Newly Discovered Inscription of Aśoka at Bahapur, Delhi', by Joshi and Pande, appeared in *JRAS*, 1967, pp. 96–8 and Plates I–II. They says that the findspot of the inscription is not in the Amarpuri Colony, but lies 'to the south-east of Delhi in a colony now being developed to the south of Srinivasapuri, the inscription is within the village limits of Bahapur'.

3. Sircar, *Stud. Geog. Ane. Med. Ind.*, pp. 21 (note 2), 92. Indraprastha is located at the site now called Purana Qila.

4. See Sircar, *Cosmography and Geography in Early Indian Literature*, p. 33.

5. *Vā* had been originally engraved and was somehow changed to *ḍhā*.

6. The upper end of the left limb of the letter is slightly curved to the left and seems to end in a dot.

7. There appear to be traces of an *akshara* after this letter. The intended reading may be *mē* or *mayā*.

8. The intended reading may be *upayāta*. There is some spaces between *ya* and *tā* and also after *tā*. It is difficult to say whether a letter was incised between *tā* and *bā*.

9. After this letter, there appear to be traces of two *aksharas* which may be *eta* (Sanskrit *atra* through an intermediate form like *itca*) meaning 'in this matter'. But it is difficult to say whether a word like this was really engraved.

10. The *akshara jaṁ* must have been engraved here. The space between *na* and the expected *jaṁ* appears to be considerable.

11. The traces of about two *aksharas* after this have probably to be ignored.

12. The damaged words are apparently *palakamasa hi*.

13. The damaged word here is *phale*.

14. The damaged word is no doubt *palakamamīnena*. This may have been followed in the original by the words *vipule pi*, though there are no clear traces of the letters.

15. The intended reading seems to be *sake*.

16. The lost aksharas are apparently *aṁtā*.

17. The damaged word appears to be *eta*.

18. For the meaning of *upāyata*, etc. see Sircar, *Indian Epigraphy*, pp. 161, ff.; also *Select Inscriptions* 1965, p. 49, note 2, and above, Vol. XXXV, pp. 287, ff.

19. Cf. *Select Inscriptions*, 1965, p. 49, note 4; also Sircar, *Maski Inscription of Aśoka*, p. 27, note 1.

PART V

The Mehrauli Iron Pillar Inscription

The Mehrauli Iron Pillar

M.C. Joshi

On The Iron Pillar of Delhi

Vincent Smith (1897)

THE GREAT MOSQUE BUILT BY QUTB-UD-DIN 'IBAK IN 1191 AD, AND, SUBSEQUENTLY enlarged by his successors, as well as its minaret, the celebrated Qutb Mīnār, stand on the site of Hindu temples, and within the limits of the fortifications known as the Fort of Rāi Pithaura,[1] which were erected in the middle or latter part of the twelfth century to protect the Hindu city of Delhi from the attacks of the Musalmāns, who finally captured it in AD 1191.[2] These buildings are situated about nine miles south of modern Delhi, or Shāhjahānābād, and lie partly within the lands attached to the village of Mihiraulī (Mehraulī).

'The front of the *masjid* [mosque] is a wall 8 feet thick, pierced by a line of five noble arches. The centre arch is 22 feet wide and nearly 53 feet in height, and the side arches are 10 feet wide and 24 feet high. Through these gigantic arches the first Musalmāns of Delhi entered a magnificent room, 135 feet long and 31 feet broad, the roof of which was supported on five rows of the tallest and finest of the Hindu pillars. The mosque is approached through a cloistered court, 145 feet in length from east to west and 96 feet in width. In the midst of the west half of this court stands the celebrated Iron Pillar, surrounded by cloisters formed of several rows of Hindu columns of infinite variety of design, and of most delicate execution.'[3]

The presence of the infinitely various Hindus columns is explained by the fact that the mosque was constructed out of the materials of twenty-seven Hindu temples, of which some are known to have been Vaishṇava and some Jaina.[3A] These temples were, with slight exceptions, utterly overthrown, so that one stone was not left upon another. The exceptions are that the lower portion of the surrounding walls of the raised terrace on which the mosque stands is the original

Excerpted from M. C. Joshi, ed., *King Chandra and the Meharauli Pillar*, Kusumanjali Prakashan, Meerut, 1989, pp. 3–58.

undisturbed platform of a Hindu temple, on the exact site of which, in accordance with the usual practice, the mosque was erected; and that the tall pillars immediately behind the great arch are in their original position.[4]

The floor of the mosque itself, the 'magnificent room' above described, 'consisted of two layers of well-dressed stone close set, nine and ten inches thick respectively, resting on a basis of rubble-stone of enormous dimensions and indefinite depth, the excavation having been carried down over fourteen feet without coming to the bottom of the layers of rubble-stone. These two layers of dressed stone extend throughout the entire area of *masjid* [mosque], courtyard, and cloisters of inner inclosure. In the courtyard, however, these layers are overlain by another layer of stones of irregular shapes and sizes, and evidently belonging to various portions of some ruined structure; the consequence of this is that the level of the courtyard is higher than the level of the floor of [the] *masjid* and cloister.'[5] It is, I think, impossible to doubt that Mr Beglar is right in the opinion that the Muhammadans left intact the beautifully-constructed double flooring resting on its massive rubble foundation, and that they are responsible for the superficial layer of broken material which overlies the floor of dressed stone in the courtyard.[6]

The Iron Pillar stands in this courtyard at a distance of ten or eleven yards outside the great arches of the mosque.[7] Until Mr Beglar, in 1871, excavated the base of the pillar, most exaggerated notions of its size were current. Sir Alexander Cunningham himself believed the total length to be not less than sixty feet, and the weight to exceed seventeen tons. Equally mistaken notions were current concerning the material of the pillar, which, probably on account of the curious yellowish colour of the upper part of the shaft, was commonly believed to be a casting of brass, bronze, or other mixed metal. An accurate chemical analysis made at Cunningham's instance, left no room for doubt as to the material.[8]

It is now established beyond the possibility of doubt that the material of the pillar is pure malleable iron of 7.66 specific gravity, and that the monument is a solid shaft of wrought iron welded together. Flaws in many parts disclose the fact that the welding is not absolutely perfect.

The total length of the pillar from the top of the capital to the bottom of the base is 23 feet 8 inches. Twenty-two feet are above ground, and only 1 foot 8 inches are below ground. The weight is estimated to exceed six tons. The lower diameter of the shaft is 16.4 inches, and the upper diameter is 12.05 inches, the diminution being 0.29 of an inch per foot. The capital, which is of the bell pattern, is $3^1/_2$ feet high.

The base is a knob or bulb, slightly irregular in shape, 2 feet 4 inches in diameter, resting on a gridiron of iron bars, soldered with lead into the upper layer of dressed stone of the pavement. The bulb does not penetrate the lower

layer of dressed stone. The column is, therefore, supported by the upper layer of the old Hindu floor, and the superficial layer of broken stone laid down by the Musalmāns.[9] It is now further steadied by a small stone bench or platform, which has been recently built round the base on the surface of the floor.

The capital consists of seven parts, namely, a reeded bell, like that of Budha Gupta's monolith at Eraṇ, a thin, plain disc, three discs with serrated edges, another thin, plain disc, and a square block.[10] Judging from the analogy of the Eraṇ monument, where a similar square block serves as pedestal to a statue, it is probable that the Iron Pillar was originally surmounted by an image of Vishṇu, the god to whom it is dedicated. The block is now meaningless, and the absence of any trace of the image is easily explained by the fact that the monument stands in the precincts of a mosque. Reeded bell capitals, more or less similar, are found on other pillars both of the Gupta period and of the much earlier age of Aśoka.[11]

The style of the pillar and the form of the characters of the inscription, considered together, permit no doubt that the monument was erected in the Gupta period. Prinsep was of the opinion that it should be dated in the third or fourth century AD. Fergusson ascribed it to one of the Gupta emperors. Bhau Dājī was inclined to date it a little later. Dr Fleet points out that the characters of the inscription closely resemble those of the panegyric on Samudra Gupta on the Allāhābād Pillar. The well-marked top lines of the letters on the Iron Pillar, which were once supposed to mark a later date, are also found in Kumāra Gupta's Bilsaḍ inscription.

The bottom line of the inscription, which covers a space about 2 feet $9^1/_2$ inches broad, by $10^1/_2$ inches high, is at a height of about 7 feet 2 inches above the stone platform in which the pillar is now fixed. The deeply-cut characters are in excellent preservation, and, with one exception, the engraving is correct.

... Many of the older travellers supposed the pillar to be a casting made of brass or bronze, but the discovery that the material is pure malleable iron, which must have been forged, has filled experts with admiration of the mechanical skill capable of accomplishing so great a work. 'It is not many years since the production of such a pillar would have been an impossibility in the largest foundries of the world, and even now there are comparatively few where a similar mass of metal could be turned out.'[12]

Another iron pillar, which may be of the same age, exists at Dhār, the ancient Dhārā, now the chief town of the Dhār State in Central India.[13] So far as I know, these two are the only notable iron pillars in existence. The worldwide belief in the special power of iron to counteract demoniacal influence[14] probably recommended the use of that material for the Delhi and Dhār pillars.

... The questions whether or not the Iron Pillar occupies its original position,

and if not, where that position must be sought, and when the pillar was removed, remain to be considered, and, if possible answered.

According to local tradition, Delhi was deserted from 57 BC until the year 792 of the Vikrama era, equivalent to AD 735–6, when a city was founded by a prince of the Tomara clan, variously named Ānaṅga Pāla [1] and Bilan De. Abul Fazl, in his summary, gives the date as 429 of the era of Vikrama, which, if corrected to the Gupta era, is equivalent to AD 747; and an inscription on the Iron Pillar itself is said to state the date as 419, which, interpreted in the same way, is equivalent to AD 737.[15] The popular belief is that this Ānaṅga Pāla I set up the Iron Pillar where it now stands.[16] But the popular belief takes no account of the inscription of Chandra, the date of which has been ascertained to be approximately AD 415, and the pillar was certainly actually erected only a short time before that date. It is, therefore, more than three centuries older than the period assumed by tradition for Ānaṅga Pāla I. I confess I have the greatest doubts as to the reality of the existence of this personage.

The first Ānaṅga Pāla of whom we possess any real knowledge is the chieftain called by Cunningham, Ānaṅga Pāla II. A contemporary inscription of his is recorded on the Iron Pillar itself. This brief record is engraved in three lines, in the Hindī language, in characters similar to those of the mason's marks on the pillars of the colonnade of the great mosque. One of these pillars, No. 12, bears on one face the word *Kachal* in Nāgārī letters, and on another the date 1124 (v.s.), equivalent to AD 1067–8. The record on the Iron Pillar in similar characters is as follows:

Saṁvat Dihali 1109 *Ang Pāl bahi*—'In Samvat 1109 [AD 1052–3] Āng [Ānaṅg] Pāl peopled [founded] Delhi.'[17]

The date of this Ānaṅga Pāla, the so-called Second, is, therefore, known with certainty, and the pillars of a temple erected in his reign still remain.[18] A tank near the Qutb mosque also bears his name, and tradition has preserved the names of a number of his descendants. Cunningham shows that the building operations of this Ānaṅga Pāla at Delhi were almost contemporaneous with the conquest of Kanauj by the Rathors, and that it was probably in consequence of that conquest that Ānaṅga Pāla established himself in Delhi.

Not a single historical event can be connected with any of the names inserted by the genealogists between Ānaṅga Pāla I and Ānaṅga Pāla II. Cunningham, who believed in the reality of the first Ānaṅga Pāla, and laboriously endeavoured to extract facts from the fiction of Hindu bards, admits that, 'with the solitary exception of the Iron Pillar,' there are no existing remains that can be assigned with certainty to the old Hindu city of Delhi. He fancied that one pillar, bearing a figure either of Buddha or of a Jain hierarch, might possibly be old, but, after a minute examination on three successive days, came to the unwilling conclusion that there is nothing now existing older than the tenth or eleventh

century. The natural inference, to my mind, is that nothing older ever existed on the site. Cunningham was firmly persuaded that the Iron Pillar stood in its original position, and that the existence of such a monument implied the existence of an ancient city. He also cherished the illusion that there must be some historical foundation for the fiction which Hindu bards love to pass off as traditions handed down from a remote past, and could not bring himself to admit their absolute worthlessness. Qutb-ud-dīn prided himself on having used up for his mosque the materials of twenty-seven temples of the idolaters. He was perfectly indifferent whether the temples dated from the eighth or the eleventh century, and, if buildings of the eighth century were in existence in his time, traces of them would now be visible in the mosque cloisters. But everything to be seen there is in the late mediaeval style, and may be referred approximately to the time of Ānaṅga Pāla II in the middle of the eleventh century.

In short, the building of old Delhi, that is to say, a town in or near Rāi Pithaura's Fort, including a group of richly decorated temples, by Ānaṅga Pāla in the middle of the eleventh century, is a verified, certain fact, and the supposed foundation of a city on the same site by an Ānaṅga Pāla, in or about AD 736, is an unverified myth, unsupported by evidence and opposed to archaeological facts.

The reasonable inference from the known facts seems to be that when Ānaṅga Pāla, in AD 1052–3, recorded on the Iron Pillar his foundation of the city, he himself set up the pillar, and that the homonymous ancestor, with whom so many foolish legends are sometimes associated, is as fictitious as the legends. Chand's version, which associates the foolish legends with Ānaṅga Pāla II, is more reasonable, if the epithet reasonable may be applied to fiction. It is extremely improbable that Ānaṅga Pāla in the eleventh century found the Iron Pillar standing in a waste, and there is absolutely no reason to suppose that any buildings of the fifth century, from the beginning of which the pillar certainly dates, ever existed on the spot. From these premises the conclusion necessarily follows that Ānaṅga Pāla brought the pillar from somewhere else, and set it up to adorn his new city, and to add sanctity to his temple of Vishṇu. He acted, in fact, in the same way as kings have acted in all ages. Fīroz Shāh Tughlaq took immense pains to move Aśoka's monoliths from Meerut and Topra to Delhi, and from Kauśāmbī to Prayāg, just as long afterwards Napoleon and other princes have thought no trouble too great to obtain possession of Egyptian obelisks for the decoration of their capitals.

The manner in which the Iron Pillar is fixed into the pavement is not, as Dr Fleet fancied, an argument against the theory of the removal, but a strong argument in its support. The pavement, as has been proved above, is the eleventh-century pavement laid down by Ānaṅga Pāla, and covered over by a layer of rubbish due to Qutb-ud-dīn. Into the surface layer of that pavement the Iron Pillar is clamped by an iron grating secured with lead solder. The pavement

certainly does not, like the pillar, date from the fifth century. It seems obviously to be the flooring of the great mediaeval group of temples destroyed by the Musalmāns. These iconoclasts were eager to overthrow the superstructure of the idol-covered temples, but had no motive for interfering with the massive flagged pavement resting on well-tried foundations of unknown depth. There is no reason to suppose that the pillar was ever disturbed since it was set up in that pavement, and it seems to my mind evident that it was set up at the time when the pavement was laid down.

These arguments are in themselves sufficient to prove that the pillar cannot occupy its original position. They are confirmed by an equally cogent argument drawn from the language of Chandra's inscription. That document expressly states that the pillar was erected on the lofty standard of the divine Vishṇu, on a mount or hill (*giri*), known by the name of Vishṇupada. This language necessarily implies that the monument was erected in a conspicuous, commanding position on the summit of a hill sufficiently isolated to bear a distinctive name. The pillar now stands in a practically level courtyard, situated in a depression with rising ground on each side. No violence to language could possibly justify the application of the term 'hill' to the present site of the monument and when the writer of the inscription said that the pillar was set up on the hill, it is impossible to doubt that he stated an obvious fact. Consequently the pillar must have been moved from its original site on a hill to its present site in a hollow.

The hill on which it was originally set up bore the name of Vishṇu's Foot, presumably because it boasted of a rock bearing impressions reputed to be the footmarks of the god. The place where the hill known as Mount Vishṇu's Foot existed must have been a well-known spot frequented by Vaishṇava pilgrims, within the Gupta dominions, and not very remote from Delhi. All the conditions of such a position are satisfied by Mathurā. That city is less than eighty miles from the Qutb Mīnār, was within the boundary of the Gupta empire, has many hills and mounds in or adjoining the city precincts, is one of the most ancient cities of India, and has been from time immemorial, the site of famous temples of Vishṇu, and a centre of Vaishṇava worship. Inscriptions both of Chandra Gupta II, who erected the Iron Pillar, and of his son, Kumāra Gupta I, who inscribed it, have been found at Mathurā.[19] For these reasons it seems to me to be extremely probable that the Iron Pillar was originally erected at Mathurā. The Katra mound, where the magnificent temple of Vishṇu, under the name of Keśava, once stood, may very probably prove to be *Vishṇupadagiri*, the Mount of Vishṇu's Footmark, mentioned in the inscription.

To sum up, my conclusions are—

1. The tradition that Delhi (that is to say, a city near the Qutb Mīnār) was founded or refounded by Ānaṅga Pāla I in or about AD 736, is

untrustworthy, and not supported by evidence. It is probable that Ānaṅga Pāla I is a myth.

2. Delhi (in the sense stated above) was certainly founded, or refounded, by a prince named Ānaṅga Pāla in AD 1052–3, who then constructed a group of temples. The floor of the platform of that group still exists as the floor of the Qutb mosque and courtyard. The Iron Pillar is clamped into that floor, and was set up when the floor was laid down.
3. The Iron Pillar was moved from its original site by Ānaṅga Pāla in or about AD 1050.
4. The original site of the pillar was at or near Mathura, on the top of a hill or mound known as Vishṇupada.
5. The pillar is a solid mass of pure malleable iron weighing over six tons, not cast, but constructed by a welding process.
6. It was originally surmounted by a statue, which was probably removed by the Muhammadans ...

On the Art of the Delhi Iron Pillar

James Fergusson (1910)

One of the most interesting objects connected with this mosque is the iron pillar which stands in its courtyard.[20] It stands 22 ft. above the ground, and as the depth under the pavement is now ascertained to be only 20 in., the total height is 23 ft. 8 in.[21] Its diameter at the base is 16.4 in., and at the capital 12.05 in. The capital is $3^1/_2$ ft. high, and is sharply and clearly wrought into the Persian form that makes it look as if it belonged to an earlier period than it does; and it has the amalaka moulding, which is indicative of considerable antiquity. It has not, however, been yet correctly ascertained what its age really is. There is an inscription upon it, but without a date. From the form of its alphabet, Prinsep ascribed it to the 3rd or 4th century[22] Bhau Daji, on the same evidence, to the end of the 5th or the beginning of the 6th century.[23] My own conviction is that it belongs to one of the Chandra Rājas of the Gupta dynasty, either consequently about AD 370 or AD 415.

Taking AD 400 as a mean date—and it certainly is not far from the truth—it opens our eyes to an unsuspected state of affairs to find the Hindus at that age capable of forging a bar of iron larger than any that have been forged even in Europe up to a very late date, and not frequently even now. As we find them, however, some centuries afterwards, using bars as long as this lāt in roofing the porch of the temple at Kanārak, we must now believe that they were much more familiar with the use of this metal than they afterwards became. It is almost equally startling to find that, after an exposure to wind and rain for

fourteen centuries, it is unrusted, and the capital and inscription are as clear and as sharp now as when put up fifteen centuries ago.[24]

Urmila Agarwal (1957)

The Meharauli Iron Pillar of the time of King Chandra, still standing erect near the Kutub at Delhi, is a mystery to he present day, since even after being exposed to sun and rain for hundreds of years together, it does not show any signs of decay by rusting or getting corroded.[25] The various explanations given so far have been altogether misguiding and to some extent unbelievable. The non-rusting of that iron pillar has led men to conclude that probably in the Gupta period, the metallurgy had advanced to such an extent, that it was possible then to prepare iron in its pure form, of which the pillar is said to have been made. According to G. J. Moody (1906), pure iron does not rust in the presence of water and air, if every trace of carbon dioxide is excluded. If the view that the iron pillar is made of pure iron is accepted, then how can it be justified that it had at the same time been protected from rusting by avoiding every trace of carbon dioxide, which is supposed to be present in the atmospheric air to the extent of 4%? Again, if the metallurgy at that time is assumed to have advanced to such an extent, then how is it that the iron metallurgical operations or processes could be realised again after a lapse of about 1600 years?

The other possible reasoning would be that probably in those days, it was possible to prepare stainless steel which is responsible for the non-rusting of the pillar. But from all the modern methods known for the manufacture of stainless steel we know that it should be an alloy of iron with chromium, nickel, vanadium, molybdenum, etc. Rare metals like vanadium and molybdenum have only very recently been discovered and no traces of them are available in the ancient relics. Hence, it shall be too rash to think of all that.

To think of the pillar being painted or white-washed with lime so as to protect it from rusting is too unwise; because, had that been the case, we would have seen the paint or white-wash with our own eyes. To think that the paint could have buffeted the wind and rain so well as to remain there for centuries, without exposing even an inch of that pillar to make it rust, is rather difficult.

The only most appealing and tangible explanation seems to be that, for giving the pillar a proper shape, the masons of ancient times must have poured water over red-hot iron for sudden cooling. Thus, the water poured on the red-hot iron would at once be converted into steam, which would further affect the rest of the red-hot iron in forming on it an adherent layer of ferroso-ferric oxide according to Barff Process. It is a well-known fact that this process is even adopted for protecting iron from rusting and for treating cans of fruits, etc., instead of tinning, because ferroso-ferric resists the action of even acids and chlorine. Ferroso-ferric being a black substance, the adherent layer thus

formed would be black throughout. It is for this reason that the Meharauli Iron Pillar at Delhi is black in appearance, and not a white shining one which would have been the case, had it been of pure iron.

On the Non-rusting of the Meharauli Iron Pillar

V.G. Pandey (1959)

The craftsmanship in iron work of the Meharauli iron pillar of king 'Chandra' is simply superb.[26] It is a single piece of iron, which does not show any sign of decay by rusting or getting corroded for centuries and has retained the inscription very clearly. The identification of king 'Chandra' of this inscription with Chandra Gupta II of the Gupta dynasty, has been generally accepted to be the best and as such, it has been favoured by majority of the scholars.[27] Therefore an explanation of the non-rusting character of this iron pillar must be sought from the sources of the Gupta period only.

The various explanations so far suggested for the non-rusting and non-decaying characters of the iron of this pillar are as under:

1. the pillar might have been painted or white-washed with the lime, to protect it from rusting;
2. probably in the Gupta period, the metallurgy was advanced to such an extent that it was possible, then, to make a pillar of pure iron;
3. probably the pillar was prepared with stainless steel.

We agree with Dr Urmila Agarwal when she remarks that these various explanations have been altogether misguiding and to some extent unbelievable.[28] About the last probable explanation, Dr Urmila Agarwal very aptly remarks that 'from all the modern methods known so far for the manufacture of stainless steel, we know that it should be an alloy of iron with chromium, nickel, vanadium, molybdenum etc. Rare metals like vanadium and molybdenum have only very recently been discovered and no traces of them are available in the ancient relics. Hence, it shall be too rash to think of all that.'[29] Thus after discarding the views of other scholars, she puts forward her own explanation, which runs thus: 'The only appealing and tangible explanation seems to be that, for giving the pillar a proper shape, the masons of ancient times must have poured water on the red-hot iron, which would at once be converted into steam, which would further affect the rest of the red-hot iron in forming on it an adherent layer of ferroso-ferric oxide according to Barff process. It is a well-known fact that this process is even adopted for protecting iron from rusting and for treating cans for fruits etc. instead of tinning, because ferroso-ferric resists the action of even acids and chlorine. Ferroso-ferric being a black substance, the adherent layer thus formed would be black throughout. It is

for this reason that the Meharauli iron pillar is black in appearance, and not a white shining one, which would have been the case, had it been of pure iron.'[30]

Though her explanation is intelligent and ingenious, we are reluctant to state that she has not attested any authority in support of her claim.

On this non-rusting character of this iron, we come across a section in Varāha Mihira's *Bṛhatsaṁhitā* wherein it is possible to find the only tangible, correct and scientific explanation. It has been accepted that this author lived and flourished during the Gupta period.[31] And hence his authority will be an appropriate source relevant to our enquiry.

Varāha Mihira has mentioned the following six kinds of *Lepas* in his *Bṛhatsaṁhitā*. He advises to apply these *Lepas* or iron etc. to preserve the objects from decay and rust:

First Lepa

The paste of the horns of a male sheep or a ram should be kneaded well with the viscid ooze or the sap of Gigantic Swallowwort.[32] In this mixture, the secretion of a blue pigeon or *Columba* and rat should be added. After kneading well, it should be applied to the object (here '*Tailmathitaśastra*'—'*Khaḍga*'). Then the object should be given a temper as required and then sharpened if required.

Second Lepa

The salt (*Kshāra*) of the plantain should be kneaded well with curd.[33] This preparation should be preserved for a few days and then it should be applied to iron. After applying this *Lepa*, the iron should be given a temper as required. Varāha Mihira claims that such a piece of iron will neither break on stone, nor on the ordinary iron, when hammered.

Third Lepa

Raw fruits of a *Diospyros glutinosa*, of the *Feronia elephantum* or of the *Crataeva valanga* or of the Wood-apple tree, flowers of *Ravari* (?), seed of the Porcupine, skin of the Screw tree (or *Helicteres ixora*, Orris-root or *Orris pseudacorus*, or sweet flag or *Acorus calamus*).[34] All these ingredients should be kneaded well in one '*Droṇa*'[35] quantity of water. This whole mixture should be boiled to 1/8th of its quantity. The following ingredients should then be added to the mixture: a whitish kind of benzoin or olibanum, viscid or sap of the '*Deodāru*' tree, viscid or sap of the *Shorea robusta*, linseed, *Aegle marmelos* or *Crataeva religiosa*, aloes or gum-myrrh, bdellium or *Amyris agallocha*, *Semecarpus anacardium* and the viscid or sap of the '*Śrī-Vāsaka*' tree (a kind of long grass, with a pink flower). This preparation should again be boiled in the same way indicated above. This is called the '*Vajra Lepa*'.

Varāha Mihira informs us that this kind of '*Vajra Lepa*', when applied, lasts for about ten thousand years.[36] This claim may appear to be an exaggeration, but when we look at the Meharauli iron pillar at Delhi, which is standing there for the last one thousand years or more, we are compelled to believe the so-called tall claim of Varāha Mihira. (Of course in this place he does not mention iron as one of the objects,[37] still we can reasonably think that the application of this *Lepa* on iron could have the same effects.)

Fourth Lepa

Ingredients: Lac, viscid ooze or sap of the '*Devadāru*', *Bdellium* or *Amyris agallocha*, '*Gṛhadūma*' (?)—fruits of the *Feronia elephantum* or of the *Crataeva valanga* or of the Wood-apple tree, yolk of the fruit of *Aegle marmelos* or *Crataeva religiosa*, '*Nāgabalāfala*' (?), fruit of the *Dispyros glutinosa*, thorn apple or *Rubia manjith*, viscid ooze or sap of the *Shorea robusta*, aloes or gum-myrrh and the crystallized sulphur[38] ... These ingredients are to be boiled to the 1/8th of its quantity. It should be applied hot. The effect of the fourth *Lepa* is the same as that of the third.

Fifth Lepa

Ingredients: Horns of the cow, she-buffalo and a male-sheep or a ram, hair of donkey, skins of the cow and she-buffalo, fruits of the 'Neem' tree and *Feronia elephantum* or of the *Crataeva valanga* or of the wood-apple tree and aloes.[39] These ingredients are to be boiled in the way mentioned in the third and fourth *Lepas*. Varāha Mihira calls this *Lepa* as '*Vajratara Lepa*' indicating thereby its superiority over all others.

Sixth Lepa

Ingredients: Iron fillings, bell metal (also queen's metal or any amalgamation of zinc and copper) and brass or peter puffed out like a sponge by exposure to heat, and the lead.[40] They should be taken in the proportion of 1: 2: 8 respectively, and mixed up. This *Lepa* is known by the name of '*Vajra-Saṅghāta*' and has been borrowed by Varāha Mihira from an architect called 'Maya'.

From the above preparation of the *Lepas*, and their effects mentioned by the author, we are convinced that in the construction of the iron pillar at Delhi any one of the above *Lepas* must have been used. Varāha Mihira has insisted throughout on the process of giving the tempers to the objects, and therefore it seems possible that this very process of giving tempers may have been worked out on this pillar which probably made the pillar black. This seems to us the only correct and scientific explanation based on the contemporary source.

On the Art of the Meharauli Iron Pillar

Joanna Gottfried Williams (1983)

The first example of Gupta manufacture is the enigmatic Iron Pillar, now installed in the Qutb Mosque at Meharauli, just outside Delhi.[41] This was probably brought from another area, a hill referred to as *Vishṇupāda* in the inscription.[42]... The capital, lotiform here as on all these pillars of the Gupta period, demonstrates that the Aśokan model remained in force for this *genre* in a way it did not for architectural columns. The form of the lotus on the Meharauli capital is relatively close to Maurya ones, except that the petal edges are all rounded (rather than round alternating with angular ones) and the 'neck' or constricted portion above is not as deeply inset as on Aśokan originals. This neck consists of a twisted band found also as early as the Sāñchī Maurya Lion capital.[43] Above this rise three fluted forms, each slightly different in profile. The lower one, precedented by a Śuṅga-period capital from Besnagar,[44] suggests the broad-grooved version of the *āmalaka* form that was to serve as a capital at Mukuṅdara and in the western Deccan. The upper cogged elements in the Meharauli capital, taken together, may form a vase, fluted on its rim, a member occurring at Besnagar at roughly this same time. Together these shapes suggest the rich ambiguity of connotations inherent in elements treated with formal harmony. Above the topmost square block, an emblem of the god Vishnu would presumably have completed the capital.

On the Metallurgy of the Meharauli Iron Pillar

B.B. Lal (1988)

The metallurgical examination of the Delhi Iron Pillar and the Adivasi iron smelted in tribal Indian villages unaffected by the inroads of modern industrial technology in traditional methods handed down from early times has shown some features not found in the modern mild steel.[45] Chemical analysis, metallographic examination, X-ray diffractometry, electron probe analysis and atmospheric corrosion tests have shown that the high corrosion resistance of the Delhi Pillar may be mainly due to the mode of smelting of the iron, and the technique of its fabrication, and may be also attributable to the dry climate of Delhi. The vertical orientation of the pillar, and the generally smooth surface of its exposed portion have also contributed to its good state of preservation. It has further been established that, unlike the modern iron and mild steel, the Adivasi iron and the iron of the Delhi Pillar are characterized by a near total absence of manganese, and are generally rust-resistant. The high purity

of the iron of the Delhi Pillar, and its freedom from manganese, a very low sulphur content, and a high phosphorus content have helped to protect the pillar from deterioration and to ensure its good state of preservation.

Where, however, optimum conditions for establishment of corrosion are present, such as in the underground buried portion and in the topmost part of the capital, copious rust scales have appeared as a result of considerable corrosion. Given environmental conditions conducive to corrosion, all varieties of iron are liable to suffer corrosion, and the Delhi Iron Pillar is no exception. Such a statement does not detract a bit from the remarkable metallurgical skill and fabrication technology that went into the making of this unique monument in the purest form of wrought iron in the 5th century AD, which stands unparalleled, in point of sheer size and weight, in the entire field of iron metallurgy. The metallurgical wonder, that is the Delhi Iron Pillar, is not a myth, as stated in some quarters, but a standing monument to the genius of early iron smelters and iron-smiths, and a living legend of iron metallurgy of 5th century India.

Introduction

The Delhi Iron Pillar at Mihrauli or Meharauli (Miharapurī), about 19 kms from Delhi, and dated to the 5th century AD, represents a unique feat of metallurgical skill of ancient Indian craftsmen. Both the high purity of the metal (it is made of pure wrought iron containing over 99.7% of the metal), and the massive size of the pillar represent a high watermark in the iron-working technology of so early an age. The pillar carries an inscription which refers King Chandra who has been identified with Chandra Gupta II. He died in AD 413; so the inscription, which was posthumously executed, is datable to AD 415. The pillar, originally put up at Mathurā, was brought to Delhi in c. 1050 AD by Ānaṅga Pāla II, when he founded his city of Delhi.[46] A slightly different version has been given by Ghosh[47] and Visvanathan; they have stated that the pillar was originally erected at some unknown site, and was brought to the present location in the 12th century AD. Further, they say that judging from the style of the top decorative work (as stated in the inscribed slab, fixed at the site), it is felt that the pillar was fabricated during the Gupta dynasty rule (AD 320–AD 495).[48]

The Delhi Iron Pillar has been an object of unceasing interest and curiosity of not only the common people but also of chemists and metallurgists who have wondered at its large size and mass, and its remarkably preserved condition in spite of its prolonged exposure to atmosphere for 1600 years. The fabrication of the pillar, so large and massive (length about 7.21 m; weight about 6 tons) in the 5th century in itself is a metallurgical and engineering

achievement unparalleled by any other monument of that age. The pillar has evoked worldwide interest among scientists and technologists because of its remarkable freedom from rusting, and many investigations have been carried out for finding out the causes of its resistance to corrosion, and the mechanism which has been operative in maintaining it in a good state of preservation. In fact many stories about its unusual feature of freedom from rust have been current for well over a century, and some of them have found their way into the writings of scientists and metallurgists, and interested investigations.[49–52] During the last seventy-five years many investigations have highlighted the superior rust-resistance of the pillar as a result of the interplay of many factors, both external (low relative humidity of the air, little atmospheric pollution, vertical orientation of the pillar with a smooth surface free from pits, cavities and depressions, and only occasional brief spells of wetness) and internal (very pure, manganese-free wrought iron with high phosphorus and low sulphur contents, produced by flux-free smelting, and the fabrication of the pillar by forge-welding and cold-work), and the investigators have justly admired the skill and technology of early Indian iron-workers in producing so large and massive a monument. In view of these researches, one is justified in observing that the metallurgical wonder, that is the Delhi Iron Pillar, is not a myth as stated in certain quarters,[53] but a standing monument to the genius of early iron smelters and ironsmiths, and a living legend of iron metallurgy of 5th century India.

Appearance, Size and Weight

The pillar does not represent a cast, but seems to have been made by force-welding a large number of iron blooms. It is remarkably free from rust and corrosion, having only a thin film of a fine, brown patina on the surface, and showing stray bright patches all round at an average height of about 1.5 m from the masonry pedestal. These bright patches did not form any original feature of this monument, but they indicate the effect of constant touching by 'good luck' seeking visitors, who, with their backs against the pillar would attempt to circumscribe it with their back-stretched hands. In 1961[54] when, on the eve of the centenary of the Archaeological Survey of India, the pillar was dug out for its chemical treatment and preservation and re-installation by embedding the underground part in a newly constructed masonry pedestal, the extensive corrosion of the lower part comprising the bulbous base came to light for the first time, and copious quantities of rust scales had then to be removed from the oxidised and corroded portion in the course of its chemical treatment.

The dimensions of the pillar, as recorded by Miss Cummings,[55] are as under:

Total length	23 ft 8 in	(7.21 m)
Portion above ground level 22 ft	22 ft	(6.71 m)
Portion below ground level 1 ft 8 in	1 ft 8 in	(50.8 cm)
Upper diameter (below the decoration)	12.5 in	(31.75 cm)
Lower diameter	16.5 in	(41.91 cm)
Total weight	estimated at about 6 tons.	

Neogi has given the following measurements:

Diameter at base	16.4 in	(41.66 cm)
Diameter at the top capital	12.05 in	(30.61 cm)
Engraved capital	3 ft 6 in	(106.68 cm)
Total length	23 ft 8 in	(7.21 m)

It was thought that a few cm below surface, the pillar expands into a bulbous form to a diameter of 2 ft 4 in (71.12 cm) and rests on a grid iron of iron bars, which are fastened with metallic lead into the stone pavement.

Cunningham[56] wrongly thought it to be 60 ft (18.29 m) long.

Following the excavation of the pillar in 1961, a detailed examination of the entire pillar (exposed portion, buried portion and the capital at the top of the pillar) was carried out by the present author, and measurements of different parts of the pillar were taken in detail, and the state of the pillar in general and of the corroded and rusted areas in particular, were photographically documented. The measurements then recorded by the Archaeological Survey of India[57] are as under:

Total length of the pillar	23 ft 6 in	(7.16 m)
Portion below ground upto the height of the raised pedestal	3 ft 1 in	(93.98 cm)
Cylindrical portion of the pillar exposed to view	17 ft	(5.18 m)
Height of the capital with decoration	3 ft 5 in	(1.04 m)
Diameter at the base of the pedestal	16.7 in	(42.42 cm)
Diameter at the top below the capital	11.85 in	(30.10 cm)
Diameter at the base (underground)	24.59 in	(62.46 cm)
Topmost square, flat surface of the capital	1 ft × 1 ft	(30.48 cm × 30.48 cm)
Diameter of the iron cylinder fitted at the top	8 in	(20.32 cm)
Length of slot or groove for flagstaff	6 in	(15.24 cm)
Depth of slot or groove for flagstaff	1 ft 3 in	(38.10 cm)

The capital of the pillar is made up of a solid cylinder of iron fitted into a deep groove at the top end of the pillar. The upper end of the cylinder has a flat square base with a rectangular slot about 15.2 cm long at the centre evidently provided for holding a flagstaff. Since the slot, about 38 cm deep, is exposed to atmosphere, much rain water accumulates into it along with rain-washed and wind-blown dust.

Scientific Examination of the Pillar

The good state of preservation of the pillar and its freedom from corrosion have excited the wonder and admiration of the common people, and even the scientists have been curious to study the causes of its corrosion resistance and mechanisms and factors that have been operative in protecting this monument from rusting and deterioration. The pillar has, therefore, formed the subject of many scientific investigations during the last hundred years. It was Cunningham who got the metal specimens of the pillar examined and analysed for the first time. Two specimens[58] were taken by him for chemical analysis by Dr Murray Thompson of the Roorkee Engineering College and Dr Percy of the School of Mines.

Chemical Analysis of Specimens from the Iron Pillar

The specimens analysed by Thompson and Percy were found to be made of wrought iron of specific gravity 7.66. This value is very close to 2.2% of the specific gravity of the purest form of iron, which is 7.84. This first chemical analysis indicates that the pillar is made of pure wrought iron.

Hadfield[59] carried out a complete quantitative chemical analysis of a specimen in 1912 and found the metal to be made of 99.72% iron free from manganese, and containing a high proportion of phosphorus and a little sulphur. The specific gravity was found to be 7.81, which is within 0.38% of the specific gravity of the purest form of wroguht iron. The remarkable freedom of this iron from other metals was thought to be responsible for the good state of preservation of the pillar, although the possibility of a deliberate production of a protective surface film by forging, heat-treating, and employing some organic material or salts has also been raised in certain quarters. Hadfield has opined that the resistance to rusting is attributable to a high phosphorus content, a low sulphur content and the absence of manganese. The relatively low proportion of sulphur indicated that probably charcoal smelted iron from a comparatively pure iron ore free from sulphur was used for the fabrication of the pillar. There are some other views.[60]

This first study of the pillar iron was published by Hadfield in 1912,[61] and it has been quoted with slight variations by Neogi, Ghosh, and Bardgett and Stanners, and shown in Table 1.

TABLE I: Hadfield's Analysis Published in 1912, *J.I.S.I.*, Vol. 85, No. 1, p. 170

Percentage of Elements	Neogi[62]	Ghosh[63]	Bardgett and Stanners[64]
Carbon	0.080	0.08	0.08
Silicon	0.046	0.046	0.046
Sulphur	0.006	Trace	0.006
Phosphorus	0.114	0.114	0.114
Manganese	Nil	Nil	Nil
Nitrogen	–	0.032	0.032
Copper	–	0.034	–
Others	–	–	0.034
Total	99.966		
Specific Gravity	7.81	7.81	

The analysis quoted by Bardgett and Stanners from Hadfield's data adds up to 100.032. If nitrogen is excluded from this total, percentage composition adds up to 100.00. The percentage against 'Others' is 0.034, if nitrogen is included; otherwise it is 0.002.

The analysis quoted by Ghosh shows 0.03% nitrogen and 0.034% copper; the percentage under 'Others' has not been stated.

The results of chemical analysis, metallographic studies, X-ray examination, and other investigations conducted by some workers have been helpful in examining the problem of corrosion resistance of the Delhi Pillar. Some of these results are set out in Table II.

Bardgett and Stanners[69] carried out an electron probe examination of a sample and found 0.07% manganese, 0.03% copper and 0.05% nickel, but no chrominum.

TABLE II: Later Analyses of the Iron from the Delhi Pillar

Percentage of Elements	Lal[65] 1945	Ghosh[66] 1963	Lahiri et al.[67] NML 1956	NML quoted by Ghosh[68] 1956
Carbon	0.90	0.23	0.26	0.28
Silicon	0.048	0.026	0.056	0.056
Sulphur	0.07	Trace	Trace (0.003)	Trace
Phosphorus	0.174	0.180	0.155	0.155
Manganese	Nil	Nil	Nil	Nil
Nitrogen	–	0.0065	–	
Copper	–	–	–	
Iron	99.67	99.768		
Others	0.011	–		
Total	100.00	100.1105		
Specific Gravity		7.672–7.747	7.5	

Lahiri et al.[70] have shown 0.28% carbon and 0.003% sulphur instead of 0.26% carbon and trace (0.003%) of sulphur.

The iron used in fabricating the Delhi Iron Pillar is thought to have been obtained from Rajasthan as heaps of iron slag forming numerous hillocks were seen near Khetri and other places indicating the existence of large-scale smelting centres from ancient times.[71] According to Hickshaw,[72] the supply of iron in India, as early as the 4th–5th century, seems to have been unlimited. In the context of the study of origin, nature and source of the iron used in the fabrication of the Delhi Pillar and its similarity in chemical composition with the iron used in early India for the manufacture of iron objects such as beams, agricultural implements, and other utilitarian iron objects, such as have been found in ancient temples and at archaeological sites, many investigations have been carried out in the iron technology, as practised by the Adivasis or tribal folks in remote areas in accordance with the traditional practice handed down from early times. These data are set out in Tables III and IV.

The split-pin[75] of iron from a 12th century tomb at Sultangunj was found to contain carbon 0.05% and phosphorus 0.056%, and the manganese content was nil. The iron piece from Fort Sinhabad, 18 miles south of Poona, was also found to be free from manganese, with a carbon content of 0.12% and a phosphorus content of 0.050%.

For a fuller understanding of the technology of iron smelting which has been in vogue with the Adivasis (the Agarias of Madhya Pradesh), available data on the composition of iron ores used in smelting, and the residual slag are recorded hereunder in Table V.

TABLE III: Analysis of Archaeological Iron Artifacts. Samples from Konark Iron Beams

Percentage of Elements	Analysis by Ghosh[73]			Analysis by Newton Friend[74]
	1	2	3	4
Carbon	0.27/0.32	0.45	0.27	0.11
Silicon	0.050	0.110	0.096	0.100
Sulphur	0.008	0.006	0.015	0.024
Phosphorus	0.015	0.018	0.018	0.015
Manganese	0.04	Trace	0.04	Nil
Nitrogen	–	–	–	–
Copper	–	Nil	0.16	–
Nickel	0.16	–	–	–
Chromium	–	0.0040	0.0025	–

TABLE IV: Analysis of Adivasi Iron Artifacts and Modern Mild Steel

Percentage of Elements	*Specimens from Different Sources					
	1	2	3	4	5	6
Carbon	1.30	0.23	0.06	0.78	0.42	0.12
Silicon	0.03	0.10	0.22	0.075	0.48	0.42
Sulphur	0.006	0.006	0.03	Trace	Trace	0.043
Phosphorus	0.019	0.015	0.20	0.140	0.043	0.037
Manganese	Nil	Nil	Nil	0.10	0.15	0.42

**Specimens*

1. Iron spear from Adivasi furnace (Analysis by Lahiri[76] et al.).
2. Specimen of iron peg from existing Adivasi furnace from Jiragora (Koraput, Orissa) (Analysis by Ghosh).[77]
3. Iron from existing Adivasi furnace at Mirjati, eight miles from Jamshedpur (Analysis by Ghosh).[78]
4. Iron extracted from the Agaria furnace after smelting for 90 minutes, Motinala Range, Dindori Tehsil, Mandla Distt. (M.P.).
5. Iron extracted from the Agaria furnace after smelting for 90 minutes, and further refining for 2 hours in the forge, Motinala Range, Dindori Tehsil, Mandla Distt. (M.P.).
6. Sample of modern mild steel (Analysis by Lahiri et al.).[79]

Specimen No. 5 was mixed with 5% slag.

TABLE V: Analysis of Iron Ore and Slag from Agaria Sites in Madhya Pradesh[80]

	*Specimens of Ore			*Specimens of Slag	
	1	2	3	4	5
Silica	13.10	3.78	9.90	18.00	16.72
Alumina	2.68	2.94	2.94	9.02	9.70
Titania	0.10	0.10	Trace	0.30	0.70
Ferrous Oxide	Trace	Trace	Trace	53.40	53.79
Ferric Oxide	69.20	80.36	70.21	10.01	9.29
Manganese Oxide	0.70	1.33	1.90	4.75	6.71
Phosphorus Pentoxide	0.12	0.46	0.22	0.45	0.435
Lime	Trace	Trace	Trace	0.40	1.40
Magnesia	1.15	0.72	1.44	2.10	0.94
Combined Water	13.00	9.80	12.60	–	–
Carbon	–	–	–	0.28	–

**Specimens*

1. Pit ore, best quality, Motinala Range, Dindori Tehsil.
2. Pit ore, very good quality, Karanjia Range, Dindori Tehsil.
3. Pit ore, good quality, Motinala Range, Dindori Tehsil.
4. Slag from Motinala Range Furnace, Dindori Tehsil.
5. Slag from Motinala Range Furnace, Dindori Tehsil.

The manganese content of these ores ranges from 0.70% to 1.90%. It is significant that while the iron smelted from such ores shows a very low manganese content of 0.10%–0.15%, the amount of manganese in the slag goes up to 4.75%–6.71%. In comparison, the manganese content of modern mild steel (specimen 6 of Table IV) is much higher (0.42%). It seems that the traditional Adivasi iron technology involving the use of charcoal without any flux results in the production of iron with a very low manganese content, and that may explain the near absence of manganese or its very low concentration in the Adivasi iron. It is highly probable that some such iron smelted by the traditional flux-free technology was used in the fabrication of large iron monuments such as the Delhi Iron Pillar, and the iron beams of Konark temple, and other iron pillars of early India. The technique of hammer-forging that was used in the production of these iron monuments must have further reduced the manganese content because of extrusion of considerable quantities of the highly manganiferous slag from the metal.

Examination of the Buried Portion of the Delhi Iron Pillar

While scientific studies of the specimens of iron from the Delhi Iron Pillar have been carried out by various workers from time to time, and various theories advanced for explaining the unusual corrosion resistance of the pillar, a detailed examination of the entire pillar including the buried portion and the capital at the top was not done until 1961,[81] when the monument was dug out and given a face-lift by subjecting it to chemical treatment and preservation, and reinstalled on a freshly constructed masonry pedestal, on the eve of the centenary of the Archaeological Survey of India. Such an examination of the buried part of the pillar, and the hollow capital surmounting it has amply demonstrated that the iron of the pillar is vulnerable to rusting like any other specimen of wrought iron.

In 1961, the lower portion of the pillar was reported to have superficially rusted. On examination by the present author,[82] the buried portion was found covered with thick crusts of rust, and copious rust scales of varying thickness, ranging from a few millimetres to about 15 millimetres, were collected, and the bulbous base of the pillar was found riddled with numerous cavities and hollows caused by deep corrosion and mineralisation of the iron. It has already been reported that the iron of the pillar had been examined and analysed in September, 1945 at the laboratories of the Chief Metallurgical Inspector to the Government of India, Jamshedpur. The samples of rust scales collected from the corroded base of the pillar were subjected to chemical analysis, and samples of soil adhering to the pillar were also analysed. The composition of the iron sample drawn from the bulbous base of the pillar was nearly the same as reported earlier in respect of the sample taken from the exposed part, the soil

samples were found loaded with appreciable quantities of soluble sulphates and chlorides.

The examination of the buried portion of the pillar revealed another interesting feature, not reported by any earlier worker. It was a sheet of metallic lead, about 3 mm in thickness, wrapped around the bulbous end to a height of about 80 cm. The lead sheet was found to be in an excellent state of preservation, and barring a superficial whitish layer, it was almost completely free from corrosion.

The pillar, having a flat circular base with eight thick projections sticking out uniformly around its circumference was found overlying an iron grid laid horizontally on a heavy slab of stone resting on the stone foundation with the sheet of lead all round it to a height of about 80 cms, and below the base. The portion of the pillar to a height of about a metre above the pedestal, which presents a rough, pitted surface, seems to have been originally embedded into the ground.

An analysis of the lead sheet gave 99.37% lead, indicating that the sheet was made of pure lead without any alloying metal.

The capital of the pillar with a deep rectangular groove or slot (presumably provided for holding the flagstaff) was examined for studying its state of preservation. It was then found that thick laminated rust scales mixed with earthy matter had accumulated at the base of the groove, indicating considerable corrosion. Here evidently marked rusting had occurred on account of accumulation of rain water and sand and clay brought by dust-laden winds, and washed down by rain into the groove. Since rain water accumulated along with dust in the groove, and kept this portion wet for long spells, conditions conducive to corrosion were evidently present, and considerable corrosion did actually take place.

As regards the exposed, cylindrical part of the pillar, it has already been stated that at the base the surface is uneven, rough and pitted, whereas at a higher level, it shows a marked polished surface in patches presumably produced by the attempts of 'good luck' seeking visitors to clasp their hands around the pillar while standing with their backs to it. Above body height, the surface of the pillar shows a dark brownish black colour. The inscription on the pillar has been found to have suffered some surface weathering—wearing and rounding effect—and the outlines of the letters have become distinctly dull and rounded. This may be due to the corrosion of the iron or physical erosion by dust-laden winds.

An examination of surface scrapings from several areas of the cylindrical, exposed part of the pillar gave a clear indication of the presence of oxides of iron, both hydrated and unhydrated, and some siliceous and calcareous matter. It is probable that the surface deposit was formed on the pillar by dust and sand because of handling by visitors. It is of interest to note that it has been

observed that some ancient wrought iron rings[83] attached to stone structures in the neighbourhood of the pillar are relatively free from rusting. It seems the rings and the exposed, cylindrical portion of the pillar have stood prolonged exposure to the atmosphere equally well, while the capital and the buried part of the pillar have shown considerable corrosion, due probably to their having remained moist because of rain and soil moisture respectively. That the buried part of the pillar is considerably more corroded than the capital is, as will be explained later, due to the metallic lead sheet wrapped round the bulbous base.

The scrapings and the rust scales were found to be markedly magnetic, and the magnetic portion did not show the presence of metallic iron. Evidently, the samples contained magnetite in considerable quantities.

Conservation of the Iron Pillar

The highly corroded condition of the buried portion of the pillar, and the rusted condition of the capital called for urgent conservation measures. The problems of chemical treatment and preservation of the pillar, which came to light following its excavation in 1961, were studied by the present author for evolving a suitable technique for its effective conservation. The preliminary treatment of the pillar, after the base had been exposed to view by digging comprised elimination of the rust, earthy accretions, and water-soluble salts, and rust preventive treatment thereafter including the consolidation of the holes, cracks and cavities. After the completion of necessary investigations, the entire pillar from the capital to the base was subjected to chemical cleaning for elimination of superficial accretions of oily and sandy-clayey matter, greasy incrustations, corrosion residues and rust stains, followed by rust preventive treatment.

The study by the present author, conducted in 1961–1962[84] revealed for the first time, that prolonged galvanic action and corrosion, induced by the juxtaposition of lead and iron of the pillar in the presence of soil salts and moisture containing dissolved oxygen and carbon dioxide had caused much damage to the buried part of the pillar. In fact the galvanic action induced by the juxtaposition of lead and iron had caused electrolytic corrosion of the pillar, which served as the sacrificial anode with metallic lead sheet as the cathode. Thus the lead sheet survived and the iron pillar suffered marked corrosion. This is to be expected since iron stands high in the electrochemical series of elements and lead stands lower down the series. If, in place of the lead sheet, a zinc sheet had been used for covering the buried bulbous part of the pillar, the latter would have served as the cathode and escaped electrolytic corrosion, and the zinc sheet, as the sacrificial anode, would have been corroded. However, the author's suggestion to use zinc sheet in place of the lead sheet could not be carried out by the structural conservators and archaeological engineers, who found the lead sheet handy for protecting the pillar from direct contact with

mortar and saline soil. When the pillar is again set in new masonry at a future date, it would be necessary to discard the lead sheet and use the zinc sheet instead. In the absence of the lead sheet, the buried base of the pillar would not have suffered the extensive electrolytic corrosion, but would have undergone rusting as was possible under the impact of the ambient environment. The electrochemical corrosion actually aggravated the normal corrosion process, and the bulbous base of the pillar set in masonry suffered damage at a rapid rate. In their study of 1963, Bardgett and Stanners[85] have not referred to the existence of the lead sheet around the buried base of the pillar, nor have they made any reference to the possibility of the occurrence of electrochemical corrosion. Ghosh,[86] on the other hand, was aware of the lead sheet wrapping, but he did not refer to the possibility of galvanic action resulting in electrochemcial corrosion. On the contrary, Ghosh observed that the lead sheet was used for providing a cushion bed to the buried bulbous end against possible disturbances and seismic vibrations.

It is not known as to whether the lead sheet wrapping of the bulbous base of the pillar was actually employed before its erection in a vertical position by resting it on an iron grid laid on a stone slab and securing it firmly with thick iron projections around the circumference of the base, nor is it known why the lead sheet was used at all. Whether its use was aimed at providing a cushioning effect to the pillar for guarding it against seismic vibrations or for preventing direct contact of the metal with earthy matter in the foundation, is anybody's guess. It is probable, though not proved, that the lead sheet was wrapped around the base before finally embedding it in the masonry construction last time. If that be so, the suggested galvanic action, presumably established soon after erection proceeded for well over eight centuries before copious rust scales came to light for the first time, when examined by the author during the excavation of the foundation of the pillar in 1961.[87] The evidence of rusting and corrosion is conclusive in indicating that this highly pure wrought iron, like other forms of iron, is prone to oxidation, corrosion and mineralisation under suitable environmental conditions.

As regards the capital of the pillar, Ghosh has observed that the side walls of the slot in the flat top of the capital, where rain water containing rainwashed suspended particulate matter, and wind-borne dust must have remained accumulated for long periods, and must have exposed this portion to 100% air relative humidity, much above the critical value of 70%, did not reveal any greater corrosion than was observed on the rest of the pillar. This observation is, however, incorrect as copious quantities of rust scales mixed with sandy and clayey matter were taken out of the slot following the excavation of the pillar and its examination by the author before its re-installation after chemical conservation in 1961. The evidence of marked corrosion of the side walls of

the slot is incontrovertible, and shows that when super-critical relative humidity conditions prevail for a long time, the process of corrosion proceeds apace in the ambient environment of the pillar. There is thus reason to believe that the ambient environment plays a decisive and important role in the corrosion of the pillar.

The results of the foregoing study by the author[88] have already been briefly reported. As stated, the lower portion was chemically treated for inhibiting further corrosion, and rest in masonry covered with a thick sheet of lead. For protecting the exposed part along with the capital, rust-preventive reagents were used. Specimens of rust and corrosion products were subjected to chemical analysis for identifying the factors responsible for corrosion and for determining the chemical changes which the original metal had undergone. The greasy accretions seen on the cylindrical part were chemically treated and all rust stains eliminated. These various features were photographically documented, as seen in illustrations.

Microscopic studies of the surface were carried out for studying the surface feature of the pillar and metallographic examination revealed the micro-structure of the metal, and the mode of its fabrication. The micro-structure indicated a heavy coldwork with elongated slag inclusions and oxides, and was very heterogenous, as both cast and annealed structures were seen in different portions besides heavily worked deformed structure. The method of making the pillar evidently consisted in forge-welding of short pieces or blooms of wrought iron into larger ones, which were subsequently hammer-welded and made into the complete pillar, and its smooth surface was formed by a continuous hammering process. The marks of the joints can be clearly seen under a hand lens; large joints are visible to the naked eye. They have evidently been formed as a result of hammer-forging of pasty lumps or balls of iron for step-by-step fabrication of the pillar, which contrary to some views, is not a cast in one piece. In this connection, it would be interesting to recall the views of Dr Pearce,[89] Director, British Cast Iron Research Association. In a private communication Pearce observed, 'You say about the pillar that it is a single piece casting. You give Sir Robert Hadfield's analysis in the early '20s as carbon 0.08%, with total impurities less than 0.25%, and a very soft material could have been cast. Metallurgically, it appears to have all the characteristics of a wrought material.... If Hadfield's analysis belongs to the Qutab Pillar, how could the people of that date have made and cast this material?'

Electron Probe Examination of Pillar Iron

According to the results of electron probe examination by Bardgett and Stanners carried out on the BISRA micro-analyser of A.E.I. type, the pillar iron contains

0.03% copper, 0.05% nickel and 0.07% manganese, but no chromium.[90] It is significant that manganese had not been detected by other investigators. In fact the iron sample was found to contain an appreciably higher concentration than the slag.

X-Ray Examination of Surface Scales and Surface Coating

An X-ray analysis of the surface coating from the rougher area about 152.4 cm from the base was found to show 15–20% quartz and 5% chalk (calcium carbonate); the remaining part of the sample was amorphous.[91] This coating was probably formed as a result of repeated handling.

A scale from the surface of the iron specimen was found by X-ray fluorescent[92] analysis to be practically free from iron. The petrological examination of the sample of scale was found to show the presence of about 80% of an oxide of iron, exhibiting the properties of a solid solution of mixtures of ferrous oxide and ferric oxide, generally found in iron scales produced by heating. About 10% of a hydrated oxide of iron was also present with optical properties similar to that of limonite, the hydrated oxide of iron. It is concluded that the scale was formed apparently under conditions of heating with some atmospheric oxidation occurring later on the surface.

Spectro-Chemical Examination of Pillar Iron

The spectro-chemical examination of the pillar iron by Ghosh has shown the presence of minute quantities of nickel and copper and a very low proportion of manganese, besides some calcium and magnesium.[93] As stated earlier, Bardgett and Stanners have also found, by electron probe examination, 0.7% manganese in the pillar iron. Wet chemical analysis by Hadfield and the present author had, however, demonstrated the total absence of manganese and similar results of wet chemical analysis were reported by Ghosh, Lahiri et al. and the National Metallurgical Laboratory, Jamshedpur. In fact, manganese has been found in minute quantities, not exceeding 0.04%, or not found at all in ancient Indian archaeological artifacts, such as the iron beams at Konark, iron pin from Sultangunj tomb, and iron piece from Sinhabad Fort. The Adivasi iron specimens have also been found to contain very minute proportions of manganese, not exceeding 0.15% (Table IV, specimens 4 and 5, mixed with some slag), or no manganese at all (Table IV, specimens 1, 2 and 3). Further analyses by Ghosh of four Adivasi iron specimens from Koraput and Jamshedpur areas of [Jharkhand] have also demonstrated a total absence of manganese. Modern mild steel has, however, been found to contain a much higher manganese content of 0.42% (Table IV, specimen 6). A significant feature common to all samples of archaeological iron and the present day Adivasi iron

is that manganese is generally absent, or present in very minute proportion. This is interesting, as modern methods do not yield manganese-free iron.

On the basis of the analytical data discussed above, it has been righty conclude by Ghosh and Lahiri et al. that the chemical composition of the Delhi Iron Pillar is quite similar to that of the iron smelted by the Adivasis by the traditional Indian method, in which charcoal is used without any flux. Since manganese is generally totally absent in archaeological iron artifacts, as is the case with the Adivasi flux-free smelted iron, Williams[94] has been led to the conclusion that the source of iron of the Delhi Pillar was the Adivasi iron. The differences in the results of chemical analysis of the pillar iron, as reported by various investigators, is indicative of the highly heterogenous character of this metal, which varies widely in chemical composition from specimen to specimen, and is characterized by a non-homogeneous micro-structure.

Study of Surface Rust and Rust Below Ground

As already stated, chemical and petrographical studies[95] into the composition and nature of the surface scales and rust collected by scraping the exposed part of the pillar (cylindrical portion and the surmounting capital) were conducted by the present author when the pillar was dug out in 1961 for chemical treatment and conservation. The scrapings were found to contain reddish brown hydrated oxides of iron (limonite—$Fe_2O_3 \cdot 3H_2O$, and goethite—$Fe_2O_3 \cdot H_2O$) and black magnetic oxide of iron (magnetite—Fe_3O_4), besides occasional particles of metallic iron, and some siliceous, calcareous and argillaceous matter. The rust from the buried part of the pillar was found to contain, besides, clayey siliceous and calcareous material, hydrated oxides of iron, metallic particles and some black oxide of iron (magnetite). Manganese was absent but phosphorus was detectable.

Ghosh[96] has examined samples of surface rust taken from the pillar above ground level, and also from the portion below ground. Both the samples were found contaminated with sandy and clayey matter evidently derived from wind or soil. The underground sample showed the presence of 0.51% metallic iron. The rust scales were found to be partly magnetic and partly non-magnetic. The ratio of magnetic to non-magnetic fraction has been found to be as follows:

Scrapings from the portion above ground level	80.1	:	19.9
Scrapings from another portion above ground	66.5	:	34.5
Underground rust scales	99.0	:	1.0

For a comparative study, Ghosh has also examined rust samples from other archaeological artifacts, such as the iron beams at Konark, rusted iron artifact from Sanur,[97] a megalithic site in South India, and rust scrapings from a sample of modern mild steel after a year's exposure. For the samples from Konark beams, the ratio of magnetic to non-magnetic fraction of the rust was found

to be 98 : 2; for Sanur specimen, the ratio was 20 : 80, and for the mild steel rust, the ratio was found to be 40 : 60.

Phase Analysis of Rust

X-ray diffractometry conducted by Ghosh[98] revealed in the magnetic fraction magnetite, goethite and some lepidocrocite; the non-magnetic portion showed lepidocrocite and some quartz, probably from the dust.

From the phase analysis discussed above, it has been concluded that the Delhi Iron Pillar carried a superficial layer of magnetite with a small proportion of ferric oxide. The higher proportion of magnetics found in the pillar rust is thought to be due to the non-conversion of magnetite formed in the first stage of oxidation or iron to the higher oxide, ferric oxide, because of stoppage of oxidation at the initial stage under the climatic conditions prevailing in Delhi. Referring to the work of Cohen, who holds the view that iron is first oxidised to magnetite, and then converted to ferric oxide, Feitknecht has observed that, in the case of the Delhi Iron Pillar, the oxidation stops at the first stage of magnetite, there being only a slight further conversion to ferric oxide because of the climatic conditions in Delhi, and that the magnetite so formed acted as a protective layer. That the magnetic oxide of iron is not converted to ferric oxide is borne out by the experimental data discussed here, which show a high proportion of magnetite (80% to 99%). It is significant that the rust from Konark beams also shows a high proportion of magnetite (98%), although the environmental conditions there are markedly different from those in Delhi. Further, the rust from the iron artifact recovered from the megalithic site of the first century BC date at Sanur contains a very low proportion of magnetite (20%) as compared to the non-magnetic fraction. A specimen from the surface of the Delhi Pillar above ground level has also shown a comparatively lower value of magnetite (65.5%). Evidently, Feitknecht's views do not hold good in these two cases.

In this connection, it is interesting to observe that buried archaeological artifacts of iron excavated at many ancient sites in different regions of India have been found in a highly corroded and mineralised condition, whereas such relics found in association with leather objects have been found in a far less corroded condition. Why magnetite is found in large quantities in some cases and not in others thus remains an open question.

Metallographic Studies of Iron from the Delhi Pillar

It has already been observed that the specimens of iron from the pillar have been found to exhibit a markedly heterogeneous micro-structure, and that the composition also varied from sample to sample. But Hadfield[99] has been impressed by the excellent quality of the iron, the like of which did not come

to his notice in any other iron monument. In fact, Hadfield[100] has observed that the good state of preservation of the pillar is unequalled by any other specimen analysed by him, and that the presence of almost insignificant amounts of silicon and sulphur, a very low carbon content, absence of manganese, and a comparatively high proportion of phosphorus have imparted to the iron a strong resistance to corrosion. These observations have also been noticed by Speller.[101] The absence of manganese, as reported by Hadfield, is significant, and this feature has been reported by other workers. The pillar is thus seen to be made of wrought iron free from other metals, and because of the high purity of this wrought iron—very low sulphur and carbon, and absence of manganese, and a high proportion of phosphorus, which is known to impart corrosion resistance to mild steel—the pillar has shown a remarkable resistance to corrosion. The near perfect condition of this old iron monument has led to a widely accepted belief in the superior metallurgical skill that had been developed in ancient India in producing highly pure wrought iron for making iron monuments such as the Delhi Iron Pillar, the large and massive iron beams of Konark, the gigantic Dhār Pillar, and other large iron monuments. It is evident that the heterogeneous micro-structure of the iron specimens from the Delhi Pillar weighted far less with Hadfield than the high purity of the iron (99.72%) and the observed superior corrosion resistance of the pillar was attributed to the high purity of the iron, and the comparatively mild climatic conditions of the region. In view of the later investigations, Hadfield's view is now thought to be untenable. Metallographic examination, exposure tests and environmental impact studies have shown that besides the quality of the pillar iron, other factors seem to be responsible for the good state of preservation of the Delhi Pillar. Such studies have been conducted by Bardgett and Stanners, Ghosh, Lahiri et al., Hudson, Vernon, Daeves et al. and others.[102]

Micro-structure of Delhi Pillar Iron

Under the metallographic microscope, the specimens generally show a fibrous structure—light-coloured bundles of fibres surrounded by magnetite, typical of pure, wrought iron, with numerous slag inclusions. The heterogeneity of the micro-structure has been observed by Bardgett and Stanners, but not to the extent found by Ghosh.

The result of metallographic examination reported by Ghosh[103] show that in the un-etched condition, the specimens showed slag inclusions irregularly distributed along with small cavities. The etched specimens revealed medium to coarse polyhedral grains of ferrite with slip bands in some grains near the surface. The surface was rather free from pearlite which seemed to increase

towards the interior. Elongated slag inclusions and oxide particles were also seen along with deformed structure indicating the effect of forge-welding.

The metallographic examination of the pillar iron, conducted by Lahiri[104] et al. has shown an irregular distribution of pearlite throughout the specimens. The absence of uniform distribution of pearlite is possibly due to the segregation of phosphorus, for such areas of phosphorus segregation diffuse carbon, thus becoming poorer in carbon content. Portions comparatively rich in carbon reveal the typical cast structure indicating that sufficient forging and working has not been done on the iron. The specimens were characterized by a high proportion of slag inclusions, and the micro-structure near slag areas showed wide variations including normalised structure and annealed structure. The other parts of the specimens showed a heavily cold-worked micro-structure as well as much distorted micro-structure. In addition, many slip bands were seen in the ferrite grains. Moreover, micro-structures containing 0.2%–0.3% carbon were present in addition to carbon-free ferrite regions.

It is seen that the iron of the Delhi Pillar shows a wide variation of microstructure in different parts, which is typical of iron and low carbon steels. Numerous oxide inclusions and stringers, and many slag inclusions are seen besides heavy cold-working and distortion of the micro-structure. Balls of hot, pasty iron had evidently been forge-welded and the metal had thus undergone a high degree of cold-working leading to distortion of the micro-structure. The surface of the pillar also showed a high degree of cold-work. The presence of stringers and elongate streaks of slag masses and inclusions, as seen in the cross-section, shows that after the metal pieces had been forge-welded, the pillar was rendered smooth, and rounded off by local forge-hammering resulting in much surface cold-working and structural distortion.

Mode of Fabrication of the Delhi Pillar

The metallographic examination by various workers has shown that the Delhi Iron Pillar was not cast, but fabricated by forging and hammer-welding lumps, balls, or discs of hot pasty iron into small pieces which were further subjected to the same operations for making much larger pieces, until by following this operation step-by-step the entire pillar was fabricated by the forging technique. Since the Adivasi iron, smelted without the addition of any flux, is relatively free from manganese, like the Delhi Pillar, it is probable that the latter was made from iron which had been smelted without any flux. In both cases, the spongy metal was not molten or free-flowing but in a pasty condition, and in both cases during forging, the slag inclusions got partly extruded from the metal, and partly closely intermixed with the metal, thereby imparting superior corrosion resistance to the iron. According to Herrero and Zubiria[105] it seems

probable that, as a result of hammer-welding and forging, the slag masses present in the iron as inclusions formed casings around the metal grains and thus served to protect it from corrosion. The remarkable freedom of the pillar from corrosion, and its good state of preservation can be attributed to the development of a finely adherent coating of slag formed around the fibres of wrought iron during the operations of hammer-welding and forging carried out for fabricating the pillar.

Impact of the Environment

Exposure tests on mild steel samples carried out for a year have shown, according to Hudson,[106] a slow, superficial corrosion leading only to a little browning of the surface. The pillar is situated far away from urbanised, industrial areas with little air pollution, and is exposed to a fairly dry climate with an average rainfall range of 38–76 cm, largely spread over the monsoon period from July to September, with occasional winter rains during December, January and February. From the monthly averages for hourly readings of relative humidity and temperature together with maximum and minimum monthly values, it is seen that the relative humidity of the air ranges from 88% to 12%, and temperature varies from 7.8°C to 39.4°C. These data indicate that for five months of the year from February to June, the average hourly relative humidity values do not exceed 68%, although the rainfall during this spell amounted to 8.9 cm and the relative humidity exceeded 80% for about 18 days in the year, and 70% for about 66 days only. Thus the ambient micro-climate around the pillar is hot and dry with considerable suspended particulate matter in the air.

According to Vernon,[107] the corrosion of iron begins only when the relative humidity reaches the threshold value of 70%. So long as the relative humidity of the air remains below this critical value, iron does not suffer significant corrosion.

Prolonged exposure tests for more than 10 years on bare steel samples show that the rate of corrosion decreases with prolonged exposure. This observation is valid for all parts of the world, except, perhaps, where industrial pollution is high. Further, the corrosion rate falls are most marked in the least polluted environment. From the published reports[108] on the corrosion tests carried out at sites showing varying levels of atmospheric pollution, it has been found that the rate of corrosion at Delhi is lower than the rate observed at the least polluted site. Further, the hypothesis that corrosion rates would be further reduced by prolonging the exposure beyond 10–20 years has been found valid by Daeves and Mewes.[109]

It has been suggested that the natural corrosion since the fabrication of the pillar has slowed down with prolonged exposure due to the formation of a protective oxide layer during the period of its initial exposure. In the ambient environment, not conducive to corrosion, such as exists in Delhi for the better

part of the year, the initial exposure results in the formation of a surface layer of oxide, which protects the iron even during brief spells of rather unfavourable conditions, which are known to prevail sometimes in Delhi. In the circumstances, the building up of a protective layer of oxide during the early years of exposure is not unreasonable to visualise. Prolonged exposure for centuries would have resulted in the build-up of a coherent oxide layer capable of withstanding rather short spells of somewhat more severe conditions, which sometimes prevail in Delhi.

Experiments and tests on bare, scale-free iron have indicated that under the ambient environment and meteorological conditions in Delhi, a 1600 year exposure would result in the loss of iron through corrosion of not more than 2.5–7.6 mm.

Views on the Corrosion Resistance of the Delhi Pillar

Ever since the superior rust resistance of the Delhi Pillar became the subject of scientific studies by Hadfield in 1912, many views have been advanced and theories formulated for explaining the near perfect state of preservation of this monument. Hadfield was impressed by the high purity of the iron, and its freedom from manganese, and he also opined that in the dry air of Delhi, the rusting may be very slight. The production of so large and massive a monument could not but have excited the wonder and admiration of the people for the technological competence and metallurgical skill of early Indian iron workers of the 4th–5th century AD, when the means for the production of large quantities of iron must have been extremely limited, and the fabrication and handling of massive iron objects extremely difficult and almost unmanageable without the requisite tools and engineering equipments. Furnaces[110] of cylindrical clay kiln type with foot/hand bellows for the blast for smelting iron, and tongs, hammers, wooden mallets and stone anvils for the forging equipment must have been harnessed to the needs of production of the pillar at that remote time of history, when the manufacture of such large iron monuments had not been achieved in any other part of the world. The Delhi Pillar has thus rightly been looked upon as a metallurgical wonder and many tales from travellers and tourists have been current for well over a century, and several theories have been propounded for explaining the characteristic feature of rust resistance of the pillar. Some of these theories are based on sundry considerations such as the appearance of the pillar, the practice of some rituals, etc., whereas others are based on climatic and environmental factors, mode of fabrication, protective oxide layer, massiveness of the pillar, heat capacity considerations, besides the surface features and orientation of the pillar, duration of its wetness and dryness, high purity of the metal and its freedom from manganese and high phosphorous content. These views are described hereunder:

1. The purity of the wrought iron has conferred on the pillar the observed superior corrosion resistance.
2. The good state of preservation is due to the comparatively dry atmosphere.
3. The sheer mass of the metal reduces the thermal effect of violent changes in temperature, and eliminates the chance of condensation of moisture on the pillar.
4. The resistance to corrosion and rusting is due to the development of a thin layer of inclusions and slag in the process of hammer forging, and the formation of a superficial protective layer of oxide.
5. The pillar was subjected to the action of steam with a view to producing a protective oxide layer.
6. The pillar has been protected from atmospheric attack by the oil that got deposited on the surface when visitors with oil-anointed bodies went up and down the pillar.
7. The application of some protective coatings has conferred on the pillar the observed superior rust resistance.

Discussion of Corrosion Resistance Theories in the Light of Scientific Data: Pure Iron Theory

Hadfield and some other authorities have observed that the Delhi Pillar is made of corrosion resistant iron. It was suggested by Hadfield that metallurgical knowledge had been developed sixteen hundred years ago for making rustless steel, that the iron of the Delhi Pillar was the purest of all the samples studied by him except probably the Swedish iron, and that the main factor in the observed corrosion resistance was the purity of the iron.

Hadfield's pure iron theory has been found to be untenable, for although his sample was pure, investigations have shown, as already discussed, that the metal is heterogeneous, as slag inclusions and carbon content are found to vary from sample to sample. Moreover, the metallographic examination has shown, as pointed out earlier, that the micro-structure of the metal varies from area to area, and that the metal shows a markedly heterogeneous micro-structure. Hadfield's nickel-copper theory has also not found favour with other investigators.

Theories Based on Environmental Considerations

Britton has observed that it is more the climatic condition and the purity of the atmosphere than the chemical composition of the metal that has been responsible for the excellent state of preservation of the pillar.

Studies by Vernon have led him to the conclusion that the air in Delhi is dry and since corrosion of iron is conditioned by the relative humidity of the air, the rusting of the pillar is inappreciable. According to him, little rusting occurs

unless the ambient relative humidity is as high as 70%. This is also in agreement with Hadfield's opinion that in dry air, rusting may be very slight. The ambient atmosphere of Delhi, relatively free from sulphur pollution, where the relative humidity of the air reaches the upper limit of 70% only occasionally for very short spells in the year, is thus not conducive to rusting, and hence the pillar is well preserved.

According to Hudson's[111] findings, as discussed earlier, the freedom of the pillar from rusting is attributable to the mild climatic conditions at Delhi. Exposure tests and other studies have led him to the conclusion that the absence of rusting is due to the mildness of the local climate rather than to any intrinsic superiority in the corrosion resistance of the iron, that the dry climate of Delhi is not conducive to corrosion, and that, as indicated by Vernon's experimental data, there is no rusting of iron if the air relative humidity is below 70%, and that rusting occurs only when this critical value is exceeded.

On the basis of his experiments on modern mild steel exposed to varying levels of relative humidity at several locations, Hudson[112] has concluded that the average rate of corrosion observed at Delhi is far less than at Sheffield, Godalming, Basra and Singapore, being of the order of 0.17–0.23 mils (1 mil = 0.001 inch) per year, with the minimum rate (0.10 mil/year) at Khartoum. Hudson's measurements of the relative humidity at Delhi show an average value of 54% at 8 A.M. and 38% at 7.30 P.M., the average rainfall being 44.20 cm.

The above view of Hudson that the apparent rust-free condition of the pillar is due to the dry atmosphere of Delhi is disproved by the fairly good state of preservation of the iron beams at Konark, in spite of their continued exposure for about 800 years to environmental conditions—humid and marine—conducive to rusting and corrosion. Thus the atmospheric factor alone is inadequate for explaining the good state of preservation of the pillar.

The extent of corrosion that the iron pillar should have undergone due to exposure for about 1600 years, as worked out on the basis of Hudson's data would be of the order of about 8.36 mm, but the excellent state of preservation of the pillar inscription, and the absence of any marked surface erosion of the letters of the inscription precludes the possibility of the occurrence of corrosion as deep as 8.36 mm. If the corrosion had progressed to this depth, the letters of the inscription should have worn away. However, the letters are found to have been only slightly rounded off along the outlines.

Bardgett and Stanners[113] have estimated the depth of corrosion in 1600 years at Delhi from exposure test data, using mild steel (0.28% copper). The corrosion rate worked out at 0.20 mil/year for the first year. Since the rate of corrosion falls off with prolonged exposure, as shown by many exposure tests carried out at several stations, it has been estimated that the corresponding corrosion in 600 years would be 0.32 inch (8.13 mm).

On the basis of Hudson's data, Choudhury[114] has calculated the extent of corrosion, and has found a value of 329 mils, equivalent to 0.329 inch. According to this calculation, about 508 kg of iron would have suffered corrosion. Choudhury has concluded that the condition of the pillar and the inscription does not indicate that corrosion of this amount has actually occurred. Since the rate of corrosion has been shown to fall off with prolonged exposure, the depth of corrosion may not be 8.36 mm, but 8.13 mm. Since the depth of the letters of the inscription on the pillar is much less than this value, the estimated extent of corrosion would have resulted in a complete wearing off of the inscription. Hudson's data do not appear to hold good in the case of the iron pillar, and it seems likely that other corrosion inhibiting factors may be operative.

According to Graves,[115] the corrosion of iron does not depend entirely on the purity of the metal nor on its composition, nor on the technique of its manufacture, but it is also largely dependent on the ambient environment such as atmospheric conditions and soil salinity. The untenability of Hudson's views is thus due to the micro-environment of the pillar, such as soil moisture, soil salinity, periods of wetness and dryness and aerodynamic conditions.

The theory that a thin, adherent layer of slag got closely worked into the surface, when the pillar was hammer-forged, and the formation of this continuous layer has protected the metal over the centuries is supported by the studies of Herrero and Zubiria,[116] who, as discussed earlier, have observed that the rust resistance of the pillar is due to the development of a fine closely adherent coating of slag formed during the process of its fabrication. However, the percentage of iron in the analysed samples has been found to be over 99% (actually ranging from 99.67% to 99.768%, as shown in Tables I and II, and it appears that the quantity of slag in the iron was too small to produce casings around the bundles of wrought iron fibres, or a thin, adherent protective layer over the entire surface of the pillar, as postulated by these workers, and their view may not be readily acceptable to investigators in the absence of supporting evidence.

The theory that a protective layer of oxide-magnetite, representing forge scales, such as are found scattered round the blacksmith's anvil, when the hot iron is beaten on it, formed during hammer-forging of the pillar has reduced the adverse impact of exposure is quite plausible for the smooth, exposed part of the pillar, but not for the exposed surmounting capital. As already stated, the metallographic examination has established a marked heterogeneity of the micro-structure of the iron pillar, and there is thus reason to believe that the fabricated pillar was not subjected to any heat treatment. In the fabrication of such a large and massive pillar, therefore, the technique of hammer-forging the hot metal in the form of lumps, discs, blooms or balls in a pasty condition must have been employed, and a smooth surface must have resulted from a systematic hammering process continued for a long period. The oxide film

formed under these conditions must have been hammered into the surface and the slag also must have been driven into the surface. This would have formed a protective layer on the surface of the pillar. Because of prolonged cooling following hammering, the layer of oxide must have fully developed, and must have exerted a protective effect, and resulted in the preservation of the pillar in a comparatively pure and dry climate.

The work of Daeves and collaborators has shown that natural corrosion since the manufacture of iron artifacts slows down on prolonged exposure. His views have already been discussed earlier, and they support the protective oxide layer theory.

As regards the theory that some protective coatings were employed for conferring corrosion resistance on the pillar, it may be observed that Neogi[117] has culled out, from *Śārṅgadhara Paddhati*, compendium on miscellaneous subjects of the 14th century AD, by the alchemist Śārṅgadhara, two formulations for improving the properties of iron artifacts. These formulations comprised five kinds of salt, mustard, honey, Piper longum and the wood of Saussuria lappa (*Kuṣṭta*), and cow's urine. The iron instruments were coated with the paste of these ingredients and heated in the fire, and then quenched in oil or cold water. As a result of this treatment, the instruments became quite good and extremely hard, so much so that they could penetrate through the hardest armour as if through leaves of trees. From these formulations it becomes clear that in the 14th century and even earlier, the metal workers were acquainted with the technique of hardening of iron by quenching hot metal in oil or water, that iron instruments were painted with mixtures containing salts and other ingredients and then heated in the furnace. It seems that such a treatment was administered to the pillar, and coatings of oxides of iron were thus formed as protective layers.

The theory of 'oil-anointing ritual' was evidently based on the knowledge that the application of oil or animal fat (*ghee*) protects the metal from atmospheric corrosion for some time, and its repeated application would form a good protective layer. It is not unlikely that repeated applications of oil (through the ceremonial going up and down the pillar by people with oil-anointed bodies) reinforced by dust laid on the oiled surface by land-laden winds produced an almost impervious coating on the pillar and this factor contributed to its excellent state of preservation. In fact it has been suggested that ceremonial anointing of the pillar with *ghee* (clarified butter)[118] had been in vogue in the past.

The theory that the pillar was subjected to high temperature oxidation in steam[119] for producing a protective oxide layer on the entire pillar does not seem to be tenable. While the fabrication of the pillar by hammer-forging is not in doubt, the use of steam for oxidising the pillar cannot be traced to any reference to such a practice in ancient texts, nor is the use of steam for oxidising the iron attested to by present day iron-working Adivasi practice.

The theory that the massiveness of the pillar with its high heat capacity has contributed to the corrosion resistance in the dry climate of Delhi was propounded by Sanyal[120] and Preston and elaborated by Bardgett and Stanners. Based on theoretical considerations, the theory is yet to be tested against experimental data. It is thought that the mass metal effect caused by a very high heat capacity of this large and very massive pillar, weighing more than 6 tonnes, is likely to prevent condensation of moisture on its surface on cold nights, thus further reducing the effect of ambient air moisture and minimising the chances of air relative humidity remaining above the critical value of 70% for any appreciable length of time. It has already been discussed earlier that the temperature variations (7.8°C–39.4°C), and relative humidity changes (88% to 12%), with an average annual rainfall of 38 cm–56 cm, are not conducive to any appreciable corrosion of iron. The critical value of the relative humidity of the air (70%) around the pillar is not likely to be exceeded during the day or the early hours of the night because of dry air. On account of the high heat capacity of the pillar because of it massiveness, this critical value of relative humidity is likely to be limited to spells of actual rainfall and to short periods thereafter, but the rapid drying of the pillar following rains leaves little time for the development of corrosion. During the greater part of the night, the pillar temperature is slowly dropping, and because of its high thermal capacity, the pillar is likely to remain still warm enough and resist corrosion, even though the relative humidity of the ambient air may be conducive to corrosion. With sunrise, there is a rapid rise in temperature, and the pillar is likely to be cooler than the air, but the period of high relative humidity of the air on the surface of the pillar can only be very brief due to rapid development of the normal dry, daytime conditions. The period of wetness of the pillar is thus likely to be very short, thus preventing the onset of conditions favouring corrosion. Bardgett and Stanners have, however, observed that the net effect is not easy to predict. The tenability of the theory of mass metal effect is thus open to question. It may be observed that the smooth and even surface of the vertically erected pillar provides little lodgement for water and dust, and the time of wetness of the surface is very brief, and under these conditions, there is little likelihood for the process of corrosion proceeding to any appreciable extent.

The cinder theory propounded by Rosenhain[121] may be considered in the context of views already discussed regarding the formation of slag-oxide protective layer. According to Rosenhain, the presence of the layers of cinder in the metal does not allow corrosion to proceed beyond that layer, but the amounts of calcium and magnesium in the rust scales have been found to be too small to confer any appreciable protection on the pillar from rusting and corrosion.

Role of Phosphorus, Sulphur and Manganese

From the discussion of various views advanced from time to time for explaining the rust-resistance of the Delhi Pillar, it appears that the various factors of rust inhibition have operated synergistically in conferring on it a long lease of life with its near complete freedom from rusting, where water and dust containing soluble salts have had little chance of attack. However, according to Ghosh[122] the major factors which have helped in protecting the pillar from corrosion are internal, viz., absence of manganese, and the presence of a high phosphorus content.

While the high phosphorus content has been known to check corrosion of iron, as discussed by Hadfield and other workers, the role of manganese in inhibiting corrosion, as suggested by Ghosh, has not been recognised by other investigators. Wet chemical analysis of early Indian iron artificats has shown that manganese is either absent or present in very small amounts. The present day Adivasi iron made in mud furnaces with charcoal as fuel, but without any flux, in accordance with the traditional iron smelting technology handed down from early times, has also been found by wet chemical analysis to show either a complete absence of manganese, or its presence in only very minute amounts. In comparison with the iron samples from archaeological artifacts, and the Adivasi iron objects, the present day steel is generally found to contain an appreciable amount of manganese. From the exposure tests, Ghosh has concluded that the former types are more resistant to corrosion than the modern steel samples. From the experimental studies on the effect of manganese on the corrosion of steel, Ghosh has shown that the peak points of corrosion occur between 0.35%–0.45% of manganese, that corrosion goes on increasing with the increase in manganese content, and that when the manganese content reaches the value of about 1.50%, any further increase in manganese content does not increase the rate of corrosion. Since most archaeological artifacts of iron made from the traditionally smelted metal, such as is smelted by the Adivasis in different regions even at present, are almost free from manganese, Ghosh has observed that the absence of manganese in the Delhi Pillar is one of the reasons for its high corrosion resistance.

Ghosh has also studied the relationship, if any, between the sulphur content of the iron samples and their corrosion resistance. Exposure tests carried out on mild steel and iron samples containing various amounts of manganese were repeated under identical conditions with samples containing varying proportions of sulphur. Ghosh has, however, not found any clear relationship between the sulphur content and observed corrosion, and unlike manganese, samples with increasing sulphur content have not shown any increasing corrosion rate. The

absence of manganese thus appears to be, according to Ghosh, one of the main reasons for the corrosion resistance of the pillar. However, Ghosh has offered no explanation for the extensive and deep corrosion of the buried part of the pillar, nor has he assigned any role to the lead sheet in the corrosion process. According to him, the lead sheet has only helped to protect the pillar from seismic vibration by acting as a cushion. The present author has, however, attributed the heavy corrosion of the buried part of the pillar to the lead sheet wrapping on the basis of electrochemical series of elements, according to which galvanic action came into play in the presence of subsoil moisture and soluble salts present in the foundation pit, and the more electropositive iron served as the sacrificial anode with lead as the cathode. The electrochemical corrosion of the bulbous base has progressed unhampered for the last many centuries.

The capital of the pillar has also been reported by the present author to have suffered marked corrosion. The metallic iron inside the groove or slot of the capital remained in prolonged contact with rain water, and the dust that got deposited inside for a few months every year following the rains. Super-critical relative humidity conditions thus prevailed inside the groove and this resulted in considerable corrosion, and formation of thick rust scales, which were actually found inside the capital in 1961, as discussed earlier.

The foregoing considerations lead to the conclusion that the various views advanced for explaining the excellent state of preservation of the pillar are, by and large, tenable of the cylindrical, exposed part of the pillar, and that the remarkable freedom of this portion of the pillar from corrosion may be due to various factors operating simultaneously such as (i) the development of a protective layer of oxide and slag during hammer-forging, (ii) the protective effect of oil or ghee left on the surface of the pillar due to visitors going up and down with oil-anointed bodies, and the ceremonial anointing of the pillar, (iii) the mass metal effect produced by a very high thermal capacity of the pillar, (iv) comparatively dry ambient environment characterized by very brief and limited periods of wetness, and remote chances of occurrence of super-critical relative humidity value exceeding 70% required for the onset of corrosion, (v) the high purity of the iron, and its freedom from manganese, and (vi) little chance for lodgement of water and dust for any length of time on the smooth and even surface of the vertically standing pillar, and its very brief spells of wetness.

Delhi Pillar Iron vis-à-vis the Adivasi Iron

The Adivasi iron made by tribal folk using the traditional technology of iron smelting and working handed down from early times is almost free from manganese, and is corrosion resistant like the iron of the Delhi Pillar. The analytical data in Table IV have been compiled from the results of chemical analysis of a large number of Adivasi artifacts made from the iron smelted in

mud furnaces, using charcoal but no flux. The metal so obtained is a spongy unmelted mass intermixed with much slag. Since charcoal is used as the fuel, and air bellows, foot or hand operated, used to produce the draft, the smelting temperature[123] is not high enough to produce molten, free-flowing metal, which collects in the furnace in a pasty condition. The iron is then forged by the blacksmiths for fabricating axes, spears, arrowheads and small agricultural tools. The iron so made appears to possess a marked corrosion resistance similar to that exhibited by the pillar on account of large slag inclusions, which, during hammer-forging, get thoroughly intermixed with the metal, and imparted, along with the oxide scales, a superior corrosion resistance on the forged objects. Studies have, however, shown that this view is valid for a dry environment only, but is not applicable to iron artifacts that remain exposed to a wet environment for long periods. The highly oxidised and corroded iron artifacts free from manganese from archaeological sites raise serious doubts about the tenability of such a view. For example, the iron object recovered from the megalithic site of Sanur near Madras, although free from manganese, has been found to be highly corroded, with a very thin metallic core. In fact, archaeological artifacts from many sites have generally been found to be highly corroded and mineralised, although they have little or no manganese. The highly corroded bulbous base of the Delhi Pillar, made of highly pure wrought iron, free from manganese, also disproves the validity of the view that absence of manganese is an important factor in the corrosion resistance of the pillar. However, the similarity in the chemical composition of the Adivasi iron and the pillar iron is not in doubt, and it has been surmised that the iron used in the fabrication of the pillar came from the Adivasi smelting furnace.[124]

The output of iron smelted in the clay-kiln type Adivasi furnace is computed to be about 30 kg of iron per day. On this basis, a period of 203 days would be required for producing 6 tons (6.096 tonnes or 6096 kgs) of iron. If ten such furnaces were used simultaneously, the time required for the production of this quantity of iron would be about 20 days.

Vulnerability of the Iron Pillar to Corrosion

From the foregoing discussion, it is seen that optimum conditions for the onset of corrosion are present in the underground buried part of the pillar and in the topmost part of the capital, and in the archaeological iron artifacts buried in the ground. In these cases, copious rust scales have appeared as a result of considerable corrosion and mineralisation. There is, therefore, no doubt that given environmental conditions conducive to corrosion, iron objects free from manganese are liable to suffer corrosion and the Delhi Iron Pillar is no exception. It has further been established from the analytical data that unlike modern iron and mild steel, the Adivasi iron and the iron of the pillar are characterized

by a near total absence of manganese, and are comparatively more rust resistant in the dry atmosphere.

Here, it is necessary to distinguish between the limited corrosive effect produced by the atmospheric conditions dominated by the dryness of the above-ground environment, and the corrosive impact by below-ground environment dominated by the constant presence of soil moisture, and soluble salts. The latter environment—ground moisture keeping the pillar moist all the time in the presence of soil-soluble salts—brought about a continuous reaction between the pillar and the oxygenated and carbonated soil moisture in the presence of soluble salts, and conditions favourable to corrosion were thus continuously present around the buried part of the pillar. Further, in the presence of the lead sheet, electrochemical corrosion played a dominant role and resulted in heavy rusting of the below-ground part of the pillar. It is thus clear that while the above-ground environment has an inappreciable corrosive impact on the exposed part of the pillar, the below-ground environment has caused much corrosion of the buried portion. The above-ground environment is not conducive to rusting.[125]

Conclusion

The Delhi Iron Pillar shows a remarkable corrosion resistance in the dry atmosphere due to its technology of fabrication just as the Adivasi iron, produced by flux-free smelting and working following the traditional iron technology, possesses a marked corrosion resistance. The wet environment below-ground and inside the slot or groove of the surmounting capital has been found to cause much corrosion. On the basis of the foregoing investigations, it has been concluded that (i) intimate mixing of the slag and iron resulted in the development of tightly adhering slag coating around the iron imparting a considerable corrosion resistance to the iron pillar by reducing the number of breakdown areas where corrosion attack could start, (ii) the corrosion attack at the breakdown areas would be reduced by the high phosphorus content of the metal, since phosphorus is known to considerably slow down the atmospheric corrosion of iron, (iii) the protective effect of rust formed on the pillar during forging would increase appreciably with the passage of time, as experimentally demonstrated by exposure tests, (iv) the mass metal effect due to the high thermal capacity of the pillar may have contributed to the observed corrosion resistance, (v) the oil and *ghee* must have exerted a protective effect on the exposed part of the pillar, (vi) the purity of iron and its freedom from manganese exerted a protective effect on the exposed part of the pillar, (vii) the dry climate of Delhi, and short spells of super-critical relative humidity may have prevented serious corrosion of the exposed part of the pillar, and (viii) the vertical orientation of the pillar with a markedly smooth surface free from pits, depressions and

hollows, which provides little lodgement for rain water and dust, and reduces the time of wetness of the pillar, may also be an important contributory factor in the protection of the monument from atmospheric corrosion. It is thus clear that the Delhi Iron Pillar is vulnerable to corrosion in a dominantly wet below-ground environment, but in the dry above-ground environment, the corrosion is inappreciable.

The results of the investigations presented here have shorn the Delhi Iron Pillar of the element of mystery and imagination, associated with it for more than a century, and to that extent, the material presented here may be treated as the history of a myth. At the same time, this account does not detract a bit from the uniqueness of the pillar—a monument to the ancient Indian ironworkers of 4th–5th century AD—which stands unparalleled and matchless in the entire history of iron metallurgy and technology of the remote past.

Notes and References

1. *Journal of the Royal Asiatic Society*, 1897, pp. 1 ff.

2. I use the conventional form Delhi for the name of the imperial city, though Dilhi is the more accurate spelling according to Muhammadan usage. The ordinary Hindī spelling is Dilli.

The best account of the numerous cities now known collectively as Delhi is that given by the late Mr Carr Stephen in his excellent work entitled 'The Archaeology and Monumental Ruins of Delhi' (Ludhiana and Calcutta, 1876). A general sketch-map of the ruined cities will be found in that book and in Cunningham's *Reports*, Vol. i, pl. xxxv. The true date of the capture of Delhi by the Muhammadans is AD 1191 (Ibid., p. 160, note).

On several matters the guidance of Carr Stephen is to be preferred to that of Cunningham.

3. Cunnigham, *Reports*, i, 186.

3A. The fact of the destruction of the twenty-seven temples is stated in the inscription over the eastern entrance of the courtyard of the mosque, and is fully corroborated by an examination of the pillars, one of which bears the date 1124 (v.s.), equivalent to AD 1067–1068. (Cunningham, *Reports*, Vol. i, pp. 175, 117, 179; and Vol. v, Preface, p. v; Carr Stephen, p. 41).

4. Cunningam, *Reports*, Vol. v, Preface, p. ii.

5. Ibid., p. 27. This passage is written by Mr Beglar. By 'inner inclosure' the writer means the original mosque of Qutb-ud-dīn, as distinguished from the later additions of Iltitmish (Iyaltamish, Altamsh) and of 'Alā-ud-din.

6. *Reports*, Vol. v, p. 32; Carr Stephen, p. 40.

7. *Reports*, Vol. i, pl. xxxviii.

8. Ibid., p. 170.

9. Cunningham, *Reports*, Vol. i, p. 169; Vol. v, p. 28, pl. v. The plate gives a plan and section of the base of the pillar drawn to scale. See also Fergusson, *Eastern and Indian Architecture*, p. 508; V. Ball, *Economic Geology of India*, pp. 338, 339; Carr Stephen, p. 16.

10. My description of the capital of the Delhi pillar is based on a good photograph and personal knowledge. The Eraṇ pillar has been described by Cunningham, whose plate is lithographed from a photograph (*Reports*, Vol. x, p. 81, pl. xxvi). A facsimile of the Iron Pillar is in the Indian Museum at South Kensington.

11. E.g.; the Kahāon and Bhitarī pillars of Skanda Gupta's reign, and the Lauriyā pillar of Aśoka. (Cunningham, *Reports*, Vol. i, pls. xxv and xxix).

12. Valentine Ball, *Economic Geology of India*, p. 388.

13. *Gupta Inscriptions*, p. 140, note 2. No detailed description of this pillar is known to me. Dr Fleet observes that 'there is no ancient inscription on it; unless it is completely hidden under, and destroyed by, a Persian inscription that was engraved on it when the Musulmans conquered that part of the country.'

14. Crooke, *An Introduction to the Popular Religion and Folklore of Northern India*, Allāhābād, 1894, p. 191.

15. These traditions are discussed by Cunningham, *Reports*, i, p. 137 seqq., and Carr Stephen, p. 11 seqq. The inscription on the Iron Pillar, which is said to give the date for Ānaṅga Pāla I as Saṁvat 419, has not been published. Abul Fazl (Gladwin's *Ayeen Akbari*, ii, 96) refers the date 429 to the Vikrama era, but Cunningham is probably right in interpreting the date as referable to the Gupta-Valabhī era.

16. Chand is said to connect the legends of the Iron Pillar with Ānaṅga Pāla II. (Carr Stephen, p. 17).

17. Cunningham, *Reports*, i, 151.

18. Cunningham assigns him a reign of thirty years, AD 1051 to 1081; but the exact limits are not known. Ibid., p. 149).

19. Mathurā Stone Inscription of Chandra Gupta II (No. 4, *Gupta Inscriptions*); Inscription dated G.E. 113 (No. 39, *Epigraphia Indica*, ii, 198).

20. *A History of Indian and Eastern Architecture*, II, 1910, p. 208.

21. It is a curious illustration how difficult it sometimes is to obtain correct information in India that when Gen. Cunningham published his '*Reports*' in 1871, he stated, apparently on the authority of Mr Cooper, Deputy Commissioner, that an excavation had been carried down to a depth of 26 ft., but without reaching the bottom. 'The man in charge, however',—*témoin oculaire*—'assured him that the actual depth reached was 35 ft.'—Vol. i, p. 169. He consequently estimated the whole length at 60 ft., but fortunately ordered a new excavation, determined to reach the bottom—*coûte qui coûte*—and found it at 20 inches below the surface.—Vol. iv, p. 28, plate 5. At a distance of a few inches below the surface it expands in a bulbous form to a diameter of 2 ft. 4 in., and rests on a gridiron of iron bars, which are fastened with lead into the stone pavement.

22. *Journal of the Asiatic Society of Bengal*, Vol. vii, p. 629.

23. *Journal Bombay Branch of the Royal Asiatic Society*, Vol. x, p. 63. Dr Fleet in

Inscriptions of the Early Guptas, pp. 139 f. gives a revised version. It bears a posthumous inscription in eulogy of the conquests of a king Chandra as to whose date or dynasty nothing is stated.

24. There is no mistake about the Meharauli pillar being of pure iron. Gen. Cunningham had a bit of it analysed in India by Dr Murray, and another portion was analysed in the School of Mines here by Dr Percy. Both found it pure malleable iron without any alloy.

25. *JUPHS* (NS), V, Pt. I, pp. 37–8.

26. *JUPHS* (NS), VII, Pt. 2, pp. 80–4.

27. Hoernle, *IA*, XXI, pp. 43–4.

Smith, *EHI* (2nd Ed.), p. 275.

Sharma, *IHQ*, XXI, pp. 202 ff.

Altekar, *A New History of the Indian People*, VI, pp. 3, 23.

Car, R.C. *IHQ*, XXVI (1950), p. 192 and others.

28. Agarwal, Urmila, 'Non-rusting of the Mehrauli iron pillar at Delhi', *JUPHS* (NS), V, Pt. I, p. 37.

29. Ibid., p. 37.

30. Ibid., p. 38.

31. Kaye, 'Hindu Astronomy', *MASI*, no. 18 (1924), pp. 8–9.

32. *Bṛhatsaṁhitā*, Ad. L., v. 25.

33. Ibid., Ād. L, v. 26.

34. Ibid., Ād. LVII, v. 1–3:

35. 5 *Guñja* = 1 *Māsa*; 16 *Māse* = 1 *Tolā*; 4 *Tole* = 1 *Pala*;
4 *Palas* = 1 *Kudava*; 4 *Kudavas* = 1 *Prastha*; 4 *Prasthas* = 1 *Aḍhaka*.
4 *Aḍhakas* = 1 *Droṇa*; 4 *Droṇas* = 1 *Maund*

36. *Bṛhatsaṁhitā*, Ād. LVII, v. 4.

37. Ibid.

38. Ibid., v. 5–6.

39. Ibid., v. 7.

40. Ibid., v. 8.

41. Williams, Joanna G., *The Art of Gupta India*, New Delhi, 1983, p. 96. Dr Joanna G. Williams is Professor of the History of Art at the University of California at Berkeley. She worked in India during 1969 and 1974–5 (on Gupta art, as a Fellow of the American Institute of Indian Studies) and during 1978–9 (on Orissan pictorial arts, as a Guggenheim Fellow).

42. Fleet, *CII*, III, 139–42; Sircar, *Select Inscriptions*, pp. 283–5.

43. Marshall and Foucher, *Monuments of Sañchī*, pl. 107.

44. Cunningham, *ASI*, X (1874–1877), pl. xiv.

45. Dr B.B. Lal is a Fellow of the Indian Academy of Sciences. Formerly he was Chief Archaeological Chemist, Archaeological Survey of India, New Delhi. He is also an Ex-Unesco Consultant. It is his original paper.

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Mehrauli Iron Pillar Inscription of Chandra

B. Chhabra and G.S. Gai

This inscription was first brought to notice in 1834, in the *JASB.*, Vol. III, p. 494, where James Princep published a lithograph of it, reduced from a facsimile made in 1831 by Lieutenant William Elliot, 27th Regiment N.I. This lithograph was not accompanied by any details of the contents of the inscription; and it does not represent a single letter of the original correctly, and is quite unintelligible from beginning to end. In 1838, in the same *Journal*, Vol. III, pp. 629 ff., James Prinsep published a much improved lithograph reduced from an ink-impression made in the same year by Captain T. S. Burt, of the Engineers; and, with it, his own reading of the text and a translation of it. And finally, in 1875, in the *JBBRAS.*, Vol. X, pp. 63 ff., Bhau Daji published a revised version of the text and translation, including the correct reading of the king's name as Chandra, with a lithograph which appears to have been reduced from a copy on cloth made by Bhagwanlal Indraji. But it was critically edited for the first time by J. F. Fleet in *CII.*, Vol. III, 1888, pp. 139 ff.

Meharaulī, or Mehrauli—an evident corruption of Mihirapurī,—is a village nine miles almost due south of Delhi, the chief town of the Delhi District. The inscription is on the west side of a tapering iron column, sixteen inches in diameter at the base and twelve at the top, and twenty-three feet eight inches high, standing near the well-known Kutb Minār in the ancient fort of Rāy Pithōrā within the limits of this village.

The writing, which covers a space of about 2' 9-$^1/_2$" broad by 10-$^1/_2$" high, is in a state of excellent preservation throughout, owing, of course, to the nature of the substance on which it is engraved. The bottom line of the inscription is about 7' 2" above the stone platform round the lower part of the column. The engraving is good; but, in the process of it, the metal closed up over some of

Excerpted from B. Chhabra and G.S. Gai, ed., *Corpus Inscriptionum Indicarum*, *Volume 3*: *Inscriptions of the early Gupta Kings*, Archaeological Survey of India, New Delhi, 1981, pp. 257–9.

the strokes, which gives a few of the letters a rather imperfect appearance in the lithograph; this is especially noticeable in the *sy* of the opening word *yasyō*, and in the *r* of *urasā* in the same line. The size of the letters varies from $^{5}/_{16}$" to $^{1}/_{2}$". The characters belong to the eastern variety of the Gupta alphabet; and, allowing for the stiffness resulting from engraving in so hard a substance as the iron of this column, they approximate in many respects very closely to those of the Allahābād pillar inscription of Samudragupta. But as a distinguishing feature, we have to notice the very marked *matrās*, or horizontal top-strokes of the letters, which we also observe in the Bilsad stone pillar inscription of Kumāragupta I. The language is Sanskrit; and the inscription is in verse throughout. In respect of orthography, we have to notice (1) the use of the dental nasal, instead of the *anusvāra*, before *ś*, in *prāṅśu*, line 6; (2) the doubling of *t*, in conjunction with a following *r*, in *śattru*, line 1; and (3) the very unusual omission of the second *t*, which is formative and not due to the preceding *r*, in *mūrtyā* for *mūrttyā*, and *kīrtyā* for *kīrttyā*, line 3.

The inscription is an eulogy of the conquests of a powerful king named Chandra, as to whose lineage no information is given. Nevertheless, as pointed out above, it must belong to Chandragupta II when he abdicated the throne and settled down as *Vānapratha*[1] at Vishṇupada. It is not dated.[2] It is a Vaishṇava inscription; and the object of it is to record the erection of the pillar, which is called a *dhvaja*, or 'standard,'[3] of the god Vishṇu, on a hill called—Vishṇupada. We are expressly told that this pillar was erected by Chandra whose mind was fixed upon Vishṇu with devotion. This also shows that Chandra was alive at that time. And this further agrees with the fact that in Gupta inscriptions he has been styled Bhāgavata.

'As regards this hill named Vishṇupada, and the question whether it should be identified with that part of the Delhi Ridge on which the column stands' says J. F. Fleet, 'the actual position of the column is in a slight depression, with rising ground on both sides; a position which hardly answers to the description of its being on a *giri* or 'hill'. And this, coupled with the tradition that the column was erected, in the early part of the eighth century AD, by Anaṅgapāla, the founder of the Tōmara dynasty,[4] lays it quite open to argument whether this is the real original position of the column, or whether, like the Aśōka columns at Delhi, and possibly the Aśōka (and Gupta) column at Allahābād, it was brought to where it now stands from some other place. But the fact that the underground supports of the column include several small pieces of metal 'like bits of bar-iron,'[5] remarks Fleet further, 'is in favour of its being now in its original position; as they would probably have been overlooked, and left behind, in the process of a transfer.'[6] But as a matter of fact such was precisely the case with the Delhi stone column of Aśōka which

was removed from Topra (Ambala District, Panjab) along with the foundation stone.[7] It is possible that this iron pillar also was removed from Vishṇupada along with foundation materials by the same Sultan Firoz Shah, to beautify his capital town.

Text (From inked estampages)

[Metre: *Śārdūlavikrīḍita* throughout]

1 Yasy=ōdvarttayataḥ pratīpam=urasā śattrūn=samēty=āgatān=Vaṅgēshv=āhava-varttinō=bhilikhitā khaḍgēna kīrttir=bhujē [|*]

2 tīrtvā sapta mukhāni yēna samarē Sindhōr=jjitā Vāhlikā[8] yasy=ādy=āpy=adhi-vāsyatē jalanidhir=vvīryy-ānilair=ddakshiṇaḥ [|| 1*]

3 Khinnasy=ēva visṛijya gāṁ narapatēr=ggām=āśritasy=ētarāṁ mūrt[t*]yā karmma-jit-āvaniṁ gatavataḥ kīrt[t*]yā sthitasya kshitau [|*]

4 śāntasy=ēva mahāvanē hutabhujō yasya pratāpō mahān=n=ādy=āpy=utsṛijati praṇāśita-ripōr=yyatnasya śēshaḥ kshitim [|| 2*]

5 Prāptēna sva-bhuj-ārjjitañ=cha suchirañ=ch=aikādhirājyaṁ kshitau Chandrāhvēna samagra-chandra-saḍriśīm vaktra-śriyaṁ bibhratā [|*]

6 tēn=āyaṁ praṇidhāya bhūmipatinā dhāvēna[9] Vishṇō[10] matiṁ prāṅśur=Vishṇupadē girau bhagavatō Vishṇōr = dhvajaḥ sthāpitaḥ [|| 3*]

Translation

(Verse 1) On whose arm fame was inscribed by the sword, when, in battle in the Vaṅga territory, he dashed back with his breast the enemies who, uniting together, came upon (him); by whom crossing the seven mouths of the Sindhu the Vāhlikas[11] were conquered in battle; by the breezes of whose valour the southern ocean is still perfumed;

(Verse 2) Who, the king, quitting this *gō* (earth), as if dejected, has resorted to another *gō* (intermediate region);[12] who, though he has, in body,[13] gone to the land (*avani*) conquered for (religious) rites, has remained on earth (*kshiti*) by fame; (and) whose great *pratāpa* (valour), (though it is now) the conclusion of the exertion of (him) who had destroyed his enemies, does not as yet leave the earth like the *pratāpa* (heat) of the conflagration in a great forest (though it has now) subsided;

(Verse 3) by that king, who acquired sole supreme sovereignty on earth by his own arm and for very long (and) who having the name Chandra and bearing beauty of face like that of the full-moon, with devotion having fixed (his) mind upon Vishṇu, this lofty flag-staff of the divine Vishṇu was set up on the hill, Vishṇupada.[14]

Notes and References

1. Introd., pp. 57–61. For different views of the identification of Chandra, see *Ind. ant.*, Vol. XLII, pp. 217ff., Vol. XLVIII, pp. 98 and ff.; S. K. Aiyangar's *Studies in Gupta History* (Reprint from *Jour. Ind. His.*), pp. 14 and ff.; Raychaudhuri's *Pol. His. Anc. Ind.* (3r ed.) pp. 328 ff. and p. 364, note; Basak's *Hist. North-Eastern Ind.*, pp. 13–14 and 16–18; D. C. Sircar, *Sel. Ins.*, 1965, p. 284, note 4.

2. Prinsep allotted this inscription to the third or fourth century AD; and Bhau Daji, to a period later than the time of the Guptas. Fergusson (*Indian Architecture*, p. 508), drawing special attention to the Persian form of the capital, expressed a conviction that the inscription is of one of the Chandraguptas of the Early Gupta dynasty, and consequently belongs to AD 363 or 400. Fleet's own impression at first, on independent grounds, was to allot it to Chandragupta I.

3. Compare *dhvaja-stambha*, 'flag-staff,' as applied to the Ēraṇ column in line 9 of the Eran stone pillar inscription of Budhagupta, year 165. There is another iron column, at Dhār, the ancient Dhārā, now the chief town of the Dhār District in Madhya Pradesh. But there is no ancient inscription on it (*A.R. ASI.*, 1902–03, pp. 205 and ff.).

4. *CASIR.*, Vo. I, p. 171.

5. Ibid., Vol. IV, p. 28, and Plate v.

6. *CIL.*, Vol. *III*, 1888, pp. 140–41.

7. D. R. Bhandarkar's *Aśōka* (2nd ed.), pp. 215–17.

8. Prinsep also read *vāhlikā*; but Bhau Daji, varying in the first syllable, read *bālhikā*. In the first *akshara* the *v* is imperfect on the right side, through the closing up of the metal. In the second *akshara*, the *h* is turned in the opposite direction to that in which it is turned in *āhava*, line 1 and *mahāvanē* and *mahān*, line 4. But, that the *akshara* is *hli*, not *lhi* is certain; because *l* can only be formed to the left; whereas, at this period, *h* was formed sometimes to the left and sometimes to the right; and, in the present inscription, it is turned to the right, as here, again in *hutabhujō*, line 4, *āhvēna*, line 5.

9. This is obviously a mistake for *bhāvēna*.

10. Read *Vishṇau*.

11. For the identification of these Vālhikas with the Kushāṇas, see Introd., p. 57 above; also (Miss) Padma Misra's article on Vālhīka and Bālhīka (*I.C.*, Vol. VIII, pp. 85 and ff.).

12. For the differentiation between *gō* (earth) and *gō* (mid-region), see Introd., pp. 57–9 above. Quite in consonance with this, the *tirthas* on earth (*pṛithivī*) have been distinguished from those in mid-region or firmament (*antariksha*) in the *MBh.*, *Vana-Parvan*, Chap. 83, vv. 93–94. And Vishṇupada, being situated on a high eminence, must have been regarded as belonging to the second category.

13. The word *mūrtiyā* clearly shows that Chandra was living in this world when the pillar was set up, that is, at Vishṇupada and as *vānaprastha*.

14. For the identification of Vishṇupada, see Introd., pp. 59–61 above.

PART VI

The Early Medieval Period: Lal Kot and Anangpur

Excavations at Lal Kot 1991–92 and Further Explorations in Delhi

B.R. Mani

RECENT ARCHAEOLOGICAL INVESTIGATIONS ATTEST TO EARLY INHABITATION OF DELHI IN the lower palaeolithic age and human activities are noticed in the following middle palaeolithic, upper paleolithic, chalcolithic and early iron ages with the beginning of the historical period. It is quite clear that the ridges of the sloping Aravalis which end at river Yamuna with tributaries and drains and undulating land surface had contained such a flora and fauna that the area remained ideal for hunters and food gatherers of prehistoric age followed by regular settlements scattered in different parts of the area in protohistoric times. The discovery of over three dozen prehistoric sites (Chakrabarti and Lahiri 1987; Sharma and Ota 1991) throughout Delhi and adjoining parts of Haryana and mostly confined to the bordering hilly area containing villages and places like Kalkaji, J.N.U. Campus, Lado Sarai, Chhatarpur, Anangpur, Surajkund and many sites in between and around Surajkund–Gurgaon stretch and different ridges around water reservoir of Surajkund, Anangpur dam, Badkhal lake–Sohna road, prove that the southern hilly area of Delhi bordering Haryana was environmentally better suited to prehistoric man. A large number of late Acheulian and middle palaeolithic tools were also collected by the author from Anangpur area which was excavated in the summer of 1991 by A.K. Sharma (1991: 74), the area towards its north in the west, north and north-east Delhi and further beyond, which was suited for farming and land and river trade, still have protohistoric and early historical remains which were either explored or revisited by the author during last three years.

History has witnessed Delhi as the capital-city of many kingdoms and empires. The foundation of the city of Indraprastha during the period of Mahābhārata war is well known. Successive waves of incursions from the west and internecine war rummaged and caused the gravity of power and urban conglomerate of Delhi shift toward resettlement on several occasions to cope

Excerpted from *Puratattva*, No. 22 (1991–2), pp. 75–6, 79–80, 83–7.

with the unpredictable vicissitudes of the time and intentions of the rulers for making the city protected, resourceful and majestic.

The legends known from local traditions connecting the name of Delhi with kings Dalip (Dilipa of Epics) or Delu, king of Kanauj (Stephen 1876: 11) do not contain any fact and it seems more possible that Indraprastha of the early historical period lost its grandeur some time around the Gupta period. Although the excavations of Purana Qila, the site of Indraprastha prove the continued habitation till the Mughal period, it is quite possible that Indraprastha lost its status much before the time of Anang Pal II, the Tomar ruler who is credited to have inhabited Delhi sometime between 1052 and 1060 AD (Cunningham 1871: 151) when it came into existence around the Lal Kot near Mehrauli. Among the epigraphical evidences, the Palam Baoli Inscription of the time of Balban dated in the year 1274 AD (V.S. 1333) categorically says 'The land of Hariyānaka was first enjoyed by the Tomaras and then by the Chauhans. It is now ruled by the Śaka Kings' (Prasad 1990: 3–15). A list of all the rulers of slave dynasty upto Balban follows who are all called śaka rulers. The name of the city is given as Ḍhillīpura and the alternative name of the city is given as Yoganīpura (Yoginīpura). It seems that the area of Lal Kot and surrounding city became known as Ḍhillī or Dhillikā after it was founded by the Tomaras. The evidences of 8th–9th century sculptures, inscriptions—including Iron Pillar Inscription and architectural fragments from Qutb Archaeological Area suggest that during the Gupta-Post Gupta and Pratihāra periods the area comprised a temple complex and was called Yoginīpura and only later it became famous as Ḍhillī or Ḍhillikā.

Similar description as given above is also found in the Sarban Stone Inscription (Eggeling 1892: 93–95; Vogel 1907–08: 10–11; Prasad 1990: 27–31) of 1327 AD (V.S. 1384) of the time of Muhammad Tughlaq which was found at village Sarban which was located about 5 miles south of the city of Delhi, a hundred years ago at the place known by the same name in the area of Raisina. It differentiates between Ḍhillikā and Indraprastha. The former has been called a city of the region of Hariyānā—

'Deśōsti Hariyānākhyaḥ prithivyāṁ swarggasaṁ-nibhahḌhillikākhyā purī tatra Tomarairasti nirmitā.'

And the latter, i.e. Indraprastha, as a pratigana (pargana or sub-division) of which Saravala (Saravana or Sarban) was a village—

'Indraprastha pratigaṇe grāme Sārvaletratu ...'

Thus Ḍhillī or Ḍhillikā was nearly 10 km away from the earlier day Indraprastha which was reduced to the status of a pratigaṇa and later a village. It is perhaps because of this reason as also believed by Carr Stephen (1876: 10–11) that Al-Biruni or Utbi do not mention the city of Delhi although they had knowledge of all other towns and cities of the nearby area.

The early history of Delhi is shrouded in mystery. It seems that the people or place known as Bodh or Bodhi, which finds mention in the *Mahābhārata* (VI. 10.37.38; 8.39) and *Mahābhāṣya* (II. 4.48) of Patañjali (Bajpai *et al.* 1967: 74) was one of the *nigamas* of Indraprastha and was regarded as a celebrated pilgrim centre. The same seems to be Nigambodh of the present, located on the right bank of Yamuna near Red Fort. The discovery of Asoka's Minor rock Edict (Joshi and Pande 1967: 96–98) near East of Kailash in New Delhi provides evidence of early historical activities in the area.

A number of scientific clearance works have been done in Delhi, particularly at important monuments besides regular excavation such as at Adilabad (Waddington 1946), Lal Kot (IAR 1957–58, 58–59, 60–61) and Purana Qila (IAR 1969–70, 70–71, 71–72, 72–73). While the earlier two excavations were confined to a limited area with limited scope, the last excavation was a major project as its land was traditionally known and formed the most important part of the city of Indraprastha where Humayun and Sher Shah had constructed various buildings and citadel of the Dinpanah city of Delhi in the 16th century. The trial digging here in 1954–5 had revealed the occurrence of Painted Grey Ware in the lower levels (IAR 1954–55: 13–14; Sharma 1990: 8). Although during the excavations conducted by the Archaeological Survey of India from 1969 to 1973 a continuously rich occupation from Maurya to Śunga, Kushan, Gupta, Post-Gupta, Rajput, Delhi Sultanate upto the Mughal period was revealed at the site, no separate horizon of Painted Grey Ware culture could be traced while the PGW shreds were found in accumulations of later date. The occurrence of late Harappan pottery and Painted Grey Ware at Mandoli and at Dhansa including late and degenerate Siswal Ware Culture and PGW at Khera Kalan (IAR 1968–69) and Badli ki Sarai (Suraj Bhan 1975: 126) and the discovery of late Harappan and Painted Grey Ware site of Kharkhari Nahar inspired the author to survey different parts of the city to have a general view of the nature of early settlements in Delhi where ancient sites are vanishing slowly and gradually. Delhi has still about 1000 existing late medieval monuments and a number of contemporary sites attached with some of them or lying separately. History and archaeology have sufficient data of later dates and hence the exploratory survey was more dedicated towards findings of the lesser known periods of the history of the city.

Excavations at Lal Kot and Anang Tal (Lat. 28° 31′ 40″N, Long. 77° 11″ E)

Lal Kot is the earliest known fort in Delhi which is supposed to have been constructed in the middle of the 11th century AD by Anang Pal II, the Tomar ruler of Delhi. Its lofty walls, massive bastions and gateways are mostly damaged and sporadically covered with debris. The circumference of the ramparts is

nearly 3.6 km with varying thickness ranging between 3 to 9 metres. The total area of the fort is 7,63,875 square metres. It is presumed that Anang Pal II peopled Delhi and constructed the Lal Kot between 1052 and AD 1060 Cunningham (1871: 151) has quoted the short inscription on Mehrauli iron pillar—"*Saṁvat Dihalī 1109 Aṅg (Ananga) Pāl Bahi*" which corresponds to AD 1052 and also confirms the same on the basis of two manuscripts obtained from Garhwal and Kumaon regions which state that on the 10th day of Margasirsha in Samvat 1117 (or AD 1060) Anang Pal built the fort of Delhi and called it Lal Kot. Amir Khusrau also mentions the palace of Anang Pal (Cunningham 1871: 144) and the *Ain-i-Akbari* and a few other works are specific about the residence of Qutbuddin Aibak and Iltutmish in the fort of Rai Pithora which is none other than the Lal Kot. This area was thoroughly surveyed by the author with the team of the Delhi circle of the Archaeological Survey of India in 1991 (Mani 1991: 147–50).

It has been said that water for making mortar for the construction of Alai Minar was brought in the time of Alauddin Khalji (AD 1296 to 1316) from adjoining Anang Tal (Cunningham 1871: 152). Kushak Firozi, Kushak Sabj and Chabutra Nasira were the palace sites of Mamluk Sultans of Delhi in the old city of Lal Kot and on the basis of Ibn Batuta it can be said that in the year AD 1205 Qutubuddin Aibak built a palace in the fort which was known as Kasr Safed or White Palace (Stephen 1876: 37–39). Kasr Safed, which was also occupied later by Iltutmish, Nasiruddin Mahmud Shah, Balban and others and where many Sultans were enthroned and which witnessed great pomp, ceremonies, contumacious brawls and bloodshed, was used as royal prison in later times. It is not unlikely that after providing extra defences to the fortification Qutbuddin Aibak altered the old palace of Anang Pal II or erected Kasr Safed in close proximity to it (Mani 1991: 149). The earlier excavations conducted by Y.D. Sharma from 1957 to 1961 at Lal Kot were mainly confined to the fortification walls, although a few structures showing housing activity had also been encountered.

The Lal Kot Excavations were taken up in February 1992 under the direction of the author assisted by Urmila Sant, A.K. Khanna, Vishnu Kant, M.K. Batra, D.K. Bhardwaj, S.K. Dikshit, R.B. Cheetri, R.K. Sachdeva, G. Nageshwar Rao, Jagdish Chander, L.S. Mamani and V.P. Verma of the Archaeological Survey of India with the view to locate the citadel area and to study the layout and settlement pattern of the palaces and other allied structures of the citadel and to confirm the literary evidences about the location and shifting of the royal seat in Delhi. Another objective was to confirm the structural conception of the huge depression on the eastern side of the mound, known as Anang Tal. The citadel area must have been at a distance from the temple-mosque complex, preferably at higher level of strategic importance with better water facility.

Such suitable spot of the citadel in the fort of Lal Kot could be searched only at the massive main mound having large structural complex of rubble stones abutting the Anang Tal on its western side.

The main mound at the citadel site of Lal Kot was named as LKT-1 where excavation trenches in form of 10 × 10 m. squares divided by quadrants were laid and excavations were done in 40 quardrants of 16 squares. Maximum height of the mound is about 8 metres near peg A1 of LKT-1(254 metres above sea level). The maximum length of the mound is about 200 metres in north-south orientation. The measurements of the adjoining Anang Tal given by Cunningham are 159 feet long from north to South and 152 feet broad from east to west with a depth of 40 feet (Cunningham 1871: 152). During the excavations it was noticed that debris of the adjoining damaged structures have fallen from all the sides in the tank and hence it is not possible to take accurate measurements of the tank unless the structures are properly exposed. Roughly, the dimensions of the inner area of the tank are about 50 × 50 metres in north-south and east-west orientations. The depth of the tank is about 14 metres from the adjoining ground level (the bottom level being 231 metres above sea level). Because of the close proximity and the probable association of the Anang Tal with the mound, the area was covered under LKT-1 and accordingly trenches were laid out in grid fashion.

A preliminary study of the excavated remains revealed a sequence of two cultural periods:

Period 1— Rajput Period (middle of the 11th century to the end of the 12th century AD).
Period II— Sultanate Period (end of the 12th century to the middle of the 14th century AD).

During this field-season, due to massive structural activities of the Sultanate period a limited area, restricted in one part of quadrant No. 1 of square C7 was excavated deep upto the natural rock wherein 13 layers were encountered upto a depth of about 5 metres. Of the Rajput period, no structure could be encountered in the area of C7 under excavation. The study of pottery provisionally suggests two phases of the Rajput period. The Phase I of Rajput period is represented by plain red ware also with red slip, decorated red ware with painted design black in colour, incised designs and occasionally stamped designs. Amongst these the vases are decorated with incised horizontal bands, wavy lines and a line of notched triangles on the shoulder. Some pots are decorated with black painted zig-zag lines on the top or side of the rim of vases, small basins and lids and criss-cross pattern and horizontal bands on the shoulder of the vases. Mention may be made of a single potsherd from layer 12 with inscribed Brahmi letters of Gupta period (around 400 AD) mentioning perhaps

a name '*v(ī)ras(o)ma*'. Only on the basis of a single sherd it is not possible at present to suggest a separate horizon of Gupta period. Future excavations are likely to concentrate more on the earlier levels to have a clear picture of the antiquity and chronology of the site.

The Phase II of Rajput period is characterized by the occasional appearance of plain glazed ware of ordinary terracotta core, black-slipped grey ware with associated red ware. Small spouted vases occasionally double-mouthed, sharp edged medium sized bowls, cooking handi with ledged shoulder and mild carination, inverted flat terminal top lid, small to large sized basins, miniature bowls and vases are the characteristic shapes of the Period I.

A conical hollow knobbed lid and ring base were introduced in the second phase. The presence of glazed ware of ordinary core indicated that this phase was much closer to the Muslim invasion of Delhi as during the Muslim period its use was plentiful. Other finds of this period include: (i) a copper ring; (ii) two terracotta beads; (iii) a lipped earthen lamp; (iv) red ware circular discs or hop-scotches and (v) some fragments of legs of terracotta figurines.

The pre-Muslim association of this cultural period is evidenced by a number of scattered or reused architectural and sculptural fragments in the following period. Among them mention may be made of a stone Varāha figure, two stone āmalakas, decorated pillar bases and a number of other decorated architectural fragments reused in later structures or scattered on the mound or in the tank area of Anang Tal along with a huge part of another amalaka and pillar bases found in the eastern part of the tank. The incised mason marks and the Nāgarī letters on dressed and semi-dressed stone blocks discovered during excavation in the south-western part of the Anang Tal are also evidences of Period.

The Sultanate Period (Period II) is represented by four structural phases. Phase I is characterized by small lime plastered water tanks of brick masonry of which the western one has a small circular hole, provided in the southern wall at the bottom, a lime floor and a magnificent circular, eight lotus petal designed water cistern with brick masonry and lime plaster and 1.40m in diametre and .72 m deep, ornamented with two series of circular drains around it. The top level of the cistern synthetised with the lime plaster floor with some sort of canopy improvised, as evidenced by the two stone pillar—bases of Rajput period set in the floor in one alignment and the two other pillar-bases may be traced after removal of the adjoining western baulk. It seems that the inlet of the cistern comes from north and joins it in the eastern side through another drain. In this phase the drains were probably open and water fell into the cistern through each petal of the lotus shape. The same drains were covered by stone chips and plastered over in the succeeding phases, i.e. Phase II. The cistern was also used in Phase II. The Phase II is characterized by

massive house complex of medium sized rubble masonry, lime floors, paved stone floor, lime plasters occasionally decorated. Noteworthy is the exposed part of the complex having two rooms of size 6.70m × 480m and 9.60m × 3m attached with a verandah of size 6.70m × 3.90m in the east and attached with 1.10m wide staircases in the north to lead upwards. The opening of this complex is in the 2m wide gallery on its eastern side with other openings of structures of the succeeding phase. Notable feature of this phase was the occasional reuse of architectural and sculptural fragments of Rajput period. Amongst such remains the small stone sculpture of Varāha of 10th–11th century AD and *āmalaka* of some temple are remarkable.

The Phase III is represented by a degenerated form of the earlier phase and is characterized by hearth, ovens, large sized storage jars buried into the floors and a thick random rubble wall running north to south which fortified the mound (LKT-1) in the western side. The residents of this phase mostly reused the structures of the former phase. They occasionally added brick masonry walls in the former structures.

The Phase IV is limited only in a small area at the top of the mound (LKT-1) and is characterized by the random rubble walls running west to east and turning towards north. On the basis of numismatic and other evidences, it seems that the first two phases of Period II represent the age of Mamluk and early Khalji Sultans (13th century AD) when the royal seat was located in the Lal Kot. The latter two phases represent late Khalji and Tughlaq periods (first half of the 14th century AD) when the capital was shifted to Siri or Tughlaqabad and the site was perhaps occupied by common folk.

The significant feature of the Sultanate period was the use of plain and painted glazed ware, both of sandy, friable with whitish gritty core as well as ordinary terracotta core with associated red ware, black-slipped grey ware and thick grey ware. The underglaze decorations are patterns painted with brushes mostly in brown or black picked out with blue or greenish blue. Most of the sherds are painted with one colour—green, blue, greenish blue, pink or brown. The important shapes of the glazed ware are shallow dishes and bowls with ring base, decorated with floral and geometrical painted designs. A medium size vase with elongated body and of ordinary glazed red ware is remarkable. Chinese celadon is represented by a few sherds from the upper layers and its indigenous variety seems to have become very popular having sandy friable brownish white core and greenish surface. Two sherds of Painted Grey Ware of Protohistoric origin were also found in two different pits of layer-2 in Quadrant No. 1 of C 1 and Quadrant No. 1 of C7 which suggest the location of such a protohistoric site in the vicinity. Among other finds mention may be made of: (i) 31 copper coins of Horseman and bull type and coins of Muhammad Ghori, Iltutmish, Razia Sultana (?), Kaikubad, Jalaluddin

Khalji, Alauddin Khalji, Ghayasuddin Tughlaq and other Tughlaq coins without names.

(ii) Fragments of inscribed Persian glazed tile with Arabic legends.

(iii) A large number of crude handmade terracotta human and animal figurines. The human figurines invariably represent bearded soldiers, categorised under Rajput period levels at Purana Qila, but found in large numbers from Sultanate period levels in the present excavations. Among animal figurines horse is the most common.

(iv) Beads of semi-precious stones, glass and terracotta.

(v) Fragments of a large number of thin green-glass vessels and bottles probably with concave base.

(vi) Glass bangles.

(vii) Ivory ring.

(viii) Terracotta lipped lamps and *dīpa-stambha*.

(ix) Terracotta glazed tiles.

(x) Ear-cleaner of copper, incense burner of copper or brass, decorated door nails of iron and other metallic objects.

Another notable feature of this period was the use in plenty of circular discs or gamesmen looking like hopscotches made out of glazed ware mostly with gritty core. The Chinese porcelain pottery is totally absent at the site which along with other evidences suggests that after the Tughlaq period the site was fully uninhabited. Not any specific evidence of a succeeding period was found in the excavations.

In the tank area of the adjoining Anang Tal the upper part is partly exposed in the south-western corner. The exposed area suggests some types of steps or retaining walls with wide and long platform of the tank. This also suggests that the repairs or additions were done after the period of its original construction most probably by Anang Pal II. The wide platform of thick lime concrete plaster was strengthened by semi-dressed stone blocks tightened with iron clamps, and just over it, the side wall of the step was partly repaired with rectangular blocks of dressed stones also tightened with iron clamps. The remarkable feature of the Rajput period was the presence of incised mason marks on the semi-dressed stone blocks which were used in the construction of the tank. Amongst the mason-marks the symbols of *swastika*, trident, circle divided into four parts, drum, numerals, letters, scorpion, bow and arrow are found which resemble such mason-marks as found in the temple of Bhojpur (M.P.) of the same period (Pande 1992: 25) and also on the reused stone slabs in the Quwwatul Islam Mosque near Qutb. The name *Pinasi* is found in Nagari characters on one of the stone blocks. These evidences clearly suggest that the tank was originally constructed in the middle of the 11th century AD, most probably by Anang Pal II whose name is conjured with it.

Explorations

The explorations by the author made during the last three years suggest that in the protohistoric period a number of settlements swelled all over and around Delhi. The settlements continued in the historical periods very likely as separate urban enclaves or townships under the city of Indraprastha (Fig. 1)

In August-September 1991, a joint exploration of Delhi area was undertaken by the Archaeological Survey of India under the directions of C.L. Suri and the author along with I.D. Dwivedi, Ashvini Asthana and other officials of Excavation Branch II and Delhi circle. The sites visited by the joint team were Kharkhari Nahar, mound of Gordon Highlanders Column, Bhorgarh, Loni, Mandoli, Jhatikra-1—all having protohistoric and early historic remains and Bankner, Majnu Ka Tila, Kot, Jhatikra-2 and Jhatikra-3—all with early historical and medieval period remains. The aim of the exploration was to spot the sites of archaeological importance in the map of Delhi as the growing constructions and levelling of old mounds have affected the whole of the city including its village areas. The ancient mounds known to the archaeologists at Majnu Ka Tila, Timarpur, Badli-Ki-Sarai, Khera Kalan, Jogabai mound have almost vanished. Among the explored sites, mounds at Kharkhari Nahar have been levelled to the ground after removal of nearly 2 to 3 metres of deposits; at Bhorgarh among the 3 mounds, one is fully inhabited while the other has been levelled and further dug for taking soil for bricks and the third one is gradually being sliced from all the sides for making more space for agricultural fields all around and portion is being occupied by modern graveyard amidst the levels containing structures of Kushan period; at Bankner the area of the mound has been utilised for construction of modern houses and the remains can only be seen at certain thin exposed sections. The high mound of Loni already known to the archaeologist since long, is in a tapering cylindrical shape with little scope for excavations because of the occupation of the mound at every level and the mound of Jhatikra-3 has already been levelled. It was noticed that excavations, if undertaken at Kharkhari Nahar, Bhorgarh, Jhatikra-1 and Kot may prove to be fruitful, as all of them are potential sites which may throw fresh light on the history and archaeology of this area. The details of the cultural assemblage of explored and revisited sites are given below—

Kharkhari Nahar (Lat. 28° 35′ 10″ N, Long. 76° 57′ 15″ E)

The site at village Kharkhari Nahar near Najafgarh in the area of Jafarpur Kalan police station in South-West Delhi was discovered by the author on 4th April, 1990 when he was accompanied by Asad Faruqui, Dy. Commissioner of Police, South-West District, Urmila Sant, S.P. Rohatgi and Jagdish Chander of the Survey as some gold and silver ornaments were reported to have been found kept in an earthen pot in the fields near the village. The ornaments, seemingly

of late medieval origin, in possession of Delhi Police were examined and were as follows:

(a) Wristlet made of lead, the upper portion of which was covered with a thin sheet of gold having a length of 12.2 cm. and mean diametre being 6.6 cm.

(b) Silver bracelet having a diametre of 8.2 cm. and thickness being 0.8 cm.

(c) Solid silver necklet (*hansli*) with a diametre of 14.5 cm. and thickness of 0.5.

(d) Four different broken pieces of solid silver necklets.

The fields all around were explored and it was found that in the near past, the mounds which existed there were levelled and pottery was scattered. At two places, because of the location of a neem tree and a room housing a tube well, small parts of the mound were left having their exposed sections with heights of about 2 metres and 2.5 metres respectively. From the latter section, sherds of Painted Grey Ware, grey ware and red ware were collected. Late Harappan pottery with close affinity to late and degenerate Siswal Ware and Bara elements and black-and-red ware were also collected. Black-slipped ware and Śunga–Kushan red ware found there points to the site being utilised by early historical man. Medieval period pottery is also found in abundance. The site was revisited in September 1881 along with C.L. Suri and his team of Excavation Branch II, New Delhi and the team of Delhi Circle of the Archaeological Survey of India. The two remaining portions of the mound were found levelled. A large number of pottery found earlier also were again collected. The important finds of this visit was the discovery of terracotta cake, terracotta toy cart frame, terracotta bangle pieces, terracotta ball, terracotta bead, bone point, bricks and stone objects.

Gordon Highlanders Column (Lat. 28° 43′ 20″N, Long. 77° 10′ E)

The site, near Badli-ki-Sarai represented today by a small mound of about 4 metres in height, has a red sand stone column at the top erected in the memory of soldiers who died in the battle of Badli-ki-Sarai in the Revolt of 1857. One grave is also located on the mound. The Painted Grey Ware association of the mound was noticed by the author in 1989 and a proposal was prepared by him for the protection of the site. The site was visited several times and by the joint exploration team also in September 1991. A very large number of Painted Grey Ware sherds were collected besides grey ware, Chocolate Ware, black-and-red ware, plain and painted black-slipped ware, Kushan and medieval ceramics like blacks slipped grey ware. A terracotta ball was also found.

Bhorgarh (Lat. 28° 49′ 45″ N, Long. 77° 5′ 15″ E)

Bhorgarh in north Delhi near Narela, is the best preserved mound of proto-historical and early historical periods. Originally there were three mounds as

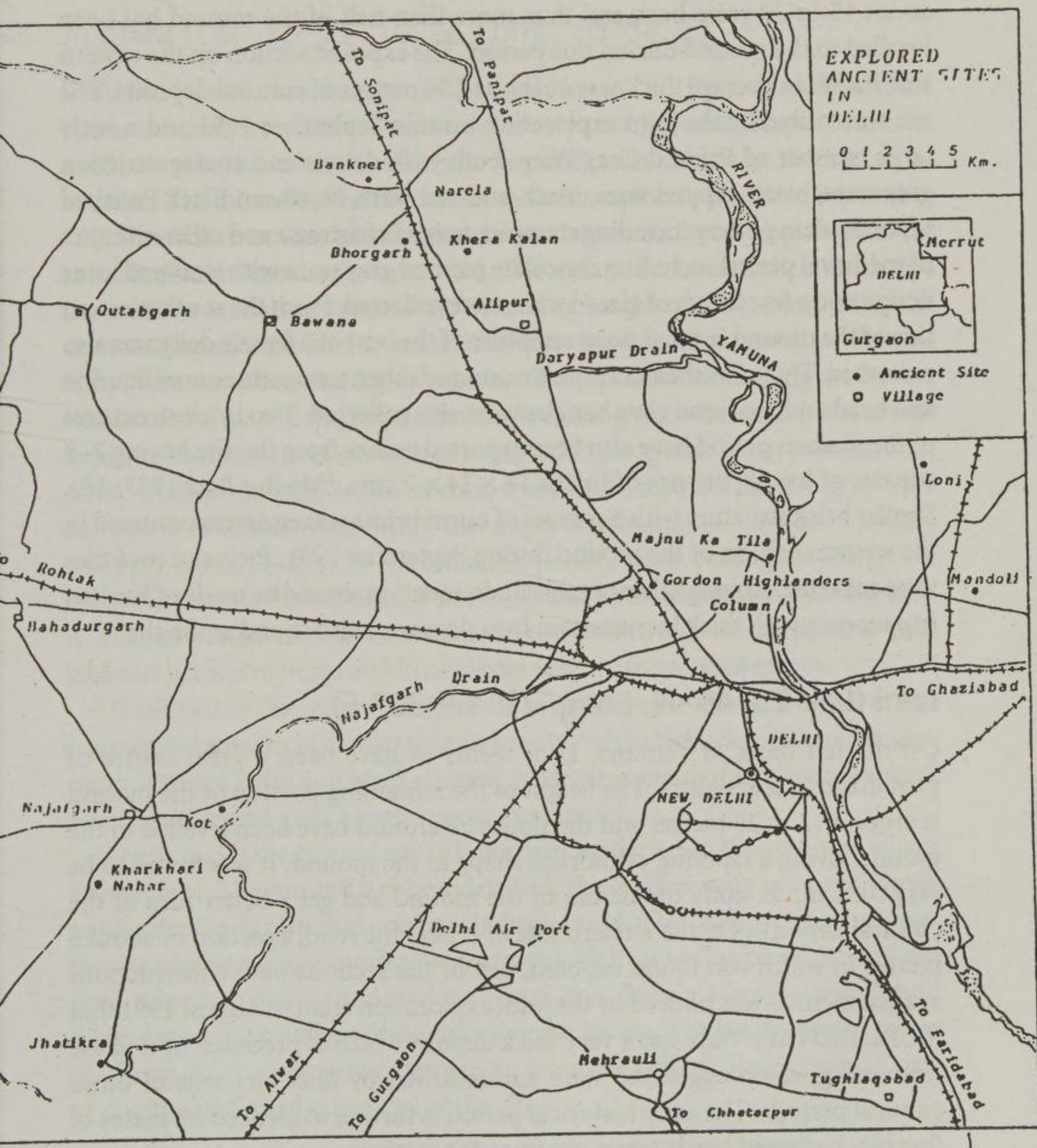

Figure 1: Excavations at Lal Kot 1991–92 and Further Explorations in Delhi

mentioned before. The intact mound, which is being cut from all sides, measures about 100 metres in north-south and 57 metres in east-west direction. That the mound has been cut both from western and eastern side is very much clear as it was about 130 metres (Madhu Bala 1977: 43) in east-west orientation about 15 to 20 years back and thus more than half of the mound has been levelled to the ground during this period. The exposed section on the eastern side shows an average thickness of about 4.50 metres of cultural deposits. The site was visited by the joint exploration team in September 1991 and a fairly large number of Painted Grey Ware, both with deluxe and coarse varieties, grey ware, black-slipped ware, black-and-red ware, Northern Black Polished Ware, Kushan pottery including stamped designs of *Śrīvatsa* and other ceremics of medieval period including chocolate painted grey ware with stamped lotus design and a few sherds of glazed ware, were collected. From the south-western side of the mound, a small stone sculpture of the bust of a female deity was also recovered. Three Polished stone pestles, stone dabber, terracotta animal figurine and bead and medieval glass bangles were also collected. Two brick structures of the Kushan period have also been reported earlier from the site having 7–8 courses of bricks, the size of bricks 18 × 24 × 7 cms. (Madhu Bala 1977: 46). Similar brick structure with 8 courses of burnt bricks was again encountered in the western section of the mound during September 1991. Pieces of roof tiles were collected. Among other notable finds, mention should be made of Kushan copper coin with thick incrustation. Iron slags were also found at the site.

Loni (Lat. 28° 45′ N, Long. 77° 17′ 30″ E)

On the left bank of Yamuna, Loni seems to have been a great centre of protohistorical activities. The height of the remaining portion of the mound is around 15 to 20 metres and the slopes all around have been levelled to the ground giving a tapering cylindrical shape to the mound. It was found to be very difficult to study the nature of the mound and get a better idea of the cultural deposits. On the western side of it near the road, a section of about 6 metres in width was found exposed, rest of the sections have constructions against them. It was noticed by the joint exploration team in August 1991 that the Painted Grey Ware has a very thick deposit which is preceded by a phase containing water-logged red ware and followed by thick deposits of other cultural periods. The early historical period is further evidenced by pieces of fine black-slipped bowls taken out from the sections.

Mandoli (Lat. 28° 42′ 10″N, Long. 77° 18′ 30″E)

Mandoli is the late Harppan site towards south of Loni on the left bank of Yamuna. The site was visited by the joint exploration team in August 1991 and ceramics of late Harappan period, Painted Grey Ware culture and early historical

and medieval periods were collected. A few years ago, the site was under excavation by the Department of Archaeology of the Delhi Administration, the details of which are awaited.

Jhatikra (Lat. 28° 31′ 15″N, Long. 76° 58′ E)

Jhatikra is located towards south of Najafgarh, about 7 km from village Kharkhari Nahar in south-west Delhi. There are three separate mounds located in almost north-south orientation and each having a distance of about 500 metres in between. The mounds were explored by the joint exploration team in September 1991. Jhatikra-1 or the central mound is the largest and most important as far as habitational deposits are concerned. The mound is not disturbed much and the sections are rather exposed very less. The height of the mound from the surrounding ground level is about 6 metres. Besides a few sherds of Painted Grey Ware the site revealed grey ware, black-slipped ware, black-and-red ware, Kushan red ware and medieval ceramics including red ware, both plain as well as painted with black colour with criss-cross designs, glazed pottery—both with sandy friable core and terracotta core, white and chocolate painted grey ware and a piece of Chinese porcelain. Other important finds from the mound include 3 copper coins, possibly of the Sultanate period, stone bead, glass bangles of many types of medieval period, a stone ball and pieces of medieval glass bottles. A Mughal period mosque is located on the eastern side of the mound with lakhauri brick structures and lime plaster with a vaulted roof over it.

Jhatikra-2 is the mound towards its south near the village Badusarai and has revealed remains of medieval period, mostly of the Delhi Sultanate or Mughal periods where plain and black painted red ware, a sherd of chinese porcelain, an iron sickle and glass bangle pieces were found.

Jhatikra-3 is the mound towards north of Jhatikra-1 in the area near village Kanganheri. The mound has been levelled, the earth mostly removed. Some potsherds of early historical origin including a sherd of black-slipped ware suggest the site having a long historical background. Plain as well as black painted red ware, a few iron objects and medieval green and blue glass bangles were found there. Among noteworthy finds, mention may be made of five decorated pieces of a brass object, a carnelian bead and a few stone objects like qurerns. A part of clay hearth was also noticed at the site.

Bankner (Lat. 28°51′ 10″N, Long. 774′ 30″ E)

Bankner is located at a distance of about 4 km north of Bhorgarh. The site which is also called Bajukhera is almost destroyed by modern building activites. During the visit of joint exploration team in September 1991 grey ware, red ware and pottery of early and late medieval periods were found. Painted Grey

Ware has also been reported earlier from the site, but it was not noticed during the exploration. Apart from a small portion of the mound on the western side rest of the same is almost covered with modern constructions. A terracotta lamp, a terracotta hopscotch and a polished stone piece with three deep cut marks were found at the site.

Majnu-Ka-Tila (Lat. 28° 41′ 35″N, Long. 77° 14″ E)

The old mound located towards north of Kashmiri Gate on the right bank of Yamuna has been completely levelled to the ground. However, during explorations conducted by the author on the right bank of Yamuna in Delhi in the winters of 1990, black-slipped ware, grey ware and red ware including a sherd of pot with perforations of early historical period and red ware—both plain and painted with black colour, black slipped grey ware and other associated pottery of medieval period were found from the accumulated debris after levelling of the ground. A terracotta bead was also found. Painted Grey Ware has been reported from the area in the past, but no such sherd was found during the explorations.

Kot (Lat. 28° 36′ 20″ N, Long. 77° 0′ 45″ E)

Kot is a rectangular mud fort located towards east of Najafgarh on the west bank of Najafgarh drain. It has two corresponding gaps in its mud walls on northern and southern sides indicating locations of gateways. The inner central area of the fort does not seem to contain any remarkable habitational deposit, but all along the walls, medieval period potsherds can be collected from the inner side. The site was visited by the joint exploration team in September 1991 and medieval red ware including a sherd with stamped design of sun, black painted red ware, grey ware, black-slipped grey ware, glazed ware with sandy friable core and discs made out of them and other associated ceramics were collected. A sherd of chinese celadon, a terracotta ball and a glass bangle piece were also found. Towards north-west of the site is located the village Sakraoti (Śakrāvatī) Nagli which seems to be a very early name like Indraprastha and which also contains the name of Indra (Śakra). It is possible that this mud fort came up during the early medieval period by Rajput rulers and served the purpose of a military outpost even as late as the Sultanate period. The evidence of remains of the brick wall abutting it in the south-eastern side facing the Najafgarh drain suggests the possibility of brick-strengthening of the fort wall at a later period. The correct picture about this interesting fortification could be possible only after it is properly excavated.

The plumaged ensemble besides producing echoes from the past may go a long way into redressing the racial and elemental problem of reconciliation of

the traditional and the modern which is more or less acute in this historic city, where a new urbanisation zone is being created.

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Anangpur Fort: The Earliest Tomar Settlement Near Delhi

B.R. Mani and I.D. Dwivedi

THE FORT OF ANANGPUR (28° 27' 40"N, 77° 15' 3-"E) IN DISTT. FARIDABAD, HARYANA, is located towards west of the village of the same name. In its vicinity is a hillock. On its eastern slopes is located the old habitational area. It has, however, considerably increased in the present century along with hundreds of modern constructions all around. The village Anangpur is situated some 30 km south of Delhi and 5 km southwest of Surajkund. The region is the quartzite table land of the Aravallis in its Tuglaqabad-Gurgaon stretch, with an average height of about 243 m above mean sea level.

Although the fort was noticed by Carr Stephen (1876) in the last century, and also by other archaeologists, neither any details were recorded by them nor any description was published even in the subsequent period when serious archaeological investigations were undertaken in the area. Archaeologists, it may be noted, were primarily interested in the Surajkund and Anangpur dams located in the vicinity; these were declared as 'protected monuments' by the Archaeological Survey of India in the beginning of the present century.

A palaeolithic site, located towards the south of Anangpur village, was discovered in 1986. Subsequently extensive explorations were undertaken in the area in 1991 and 1992 by the Prehistory Branch of the Archaeological Survey of India under A.K. Sharma and S.B. Ota. (Sharma & Ota 1991). A few trenches were laid at different places in order to ascertain the position of implementiferous horizon and a large number of late Acheulian tools of quartzite, comprising of handaxes, cleavers, scrapers, points, discoids, etc. were found both in the excavations and in surface collections. The area was also explored by the author, from the Delhi Circle of A.S.I., and Sri Ram Saran, the second author, from the Excavation Branch II of the Archaeological Survey of India. During exploration, hundreds of paleolithic tools were collected. In December 1992, the village area and adjoining hillock with the remains of ancient fortifications

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and structures of its citadel were explored by the authors and Sri Ram Ṣaran along with their teams.

Anangpur, also called Anekpur or Aṛangpur, was inhabited by Anang Pal of the Tomar dynasty. There were definitely two, and possibly three rulers of the same name in the dynastic history of the Tomars. Anang Pal II constructed the Lal Kot and inhabited the first city of Delhi in between AD 1052 to 1060. (Cunningham 1871; Mani 1991). Thus, it seems that Anangpur was either founded by Anang Pal II, or if earlier than him, then most probably by Anang Pal I. Cunningham (1871) has cited the opinion of Sir Syed Ahmed about the foundation of Anangpur in Samvat 733 (AD 676) by Anang Pal I, but according to him the above date seems to be in the Valabhi era of AD 318. Thus the foundation of Anangpur, as per his view, seems to have taken place in AD 1051 by Anang Pal II who also founded Delhi in the same year. According to one recent view, the date of Anang Pal I ranges from AD 736 to 754 (Dwivedi 1973).

The exploratory survey of the site and the study of architectural features do not help much to arrive at a definite conclusion about the date of the construction of the fort and the period of its occupation in the 7th-8th century or 11th century AD. As the data collected are quite insufficient, archaeological excavation of the fort alone would shed some light on this otherwise comparatively dark chapter of the Rajput history of Delhi and its neighbourhood. Since Anang Pal II constructed Lal Kot and peopled Delhi in the middle of the 11th century AD, the question arises about the location of the habitation and the seat of administration of the Tomar rulers of Delhi who preceded Anang Pal II. It is, therefore, quite logical and traditionally accepted that the Tomars, who had the status of feudatory rulers under the Pratiharas in the beginning, had settled, in the Aravallis, most probably at Anangpur, in the 8th century and continued there till they became fully independent rulers in the 11th century AD. It is then that they shifted their royal seat to Lal Kot and founded a new city, called Ḍhillī, Ḍhillikā or Ḍhillikāpurī. It was done in the erstwhile temple township of Yoginīpura, where they had constructed a number of temples, the ruined architectural fragments of which are scattered in the Qutb Archaeological Area and in its vicinity.

Among the two major Tomar Rajput monuments of the area, the Anangpur dam was definitely constructed to block the upstream rain-water for irrigation of the fields. About 50 metres wide and 7 metres high, the dam with sluice, or trap-doors, at its openings for controlled flow of water in the ravine, is a well known architectural marvel of the period. A number of ravines in the hilly parts of the area terminated as different palaeochannels of Yamuna, the last of which is the fifth palaeochannal which flowed in prehistoric times through Surajkund area towards the northeast of Anangpur dam. Taking advantage of the connecting internal drainage system and the depression of the palaeochannel,

the Tomars had constructed Surajkund, a reservoir with stepped stone embankment on a semicircular plan.

During the course of exploration of the area in 1992, a Nagari inscription written in 5 lines within a square frame on an upright quartzite stone block, standing vertically in the fields, was found. It mentions probably some year (Samvat˜1618) and numerals, not easily legible. The lower part of a stone sculpture of 9th–10th, century showing a seated drummer to the left of the main broken figure was the only other antiquarian remain noticed in the lower area of the hill in the village.

The fort wall, covered under debris on the western side of the village, gradually rises from the southern slopes of the hillock and runs towards north with varying thickness, between 3 to 4 metres covering the crest of the hill from south, west and north sides. The length of the elliptical fort wall is more than 300 metres in north-south-orientation and traces of 21 semicircular bastions were noticed all along the wall, each located at an interval of 15 to 16 metres. The rampart and bastions were constructed with local worked stone blocks of large and medium sizes. In the middle of the wall, a gap of about 4 metres was noticed in between two bastions which perhaps represents the western gateway of the fort. Some constructions of rubble structures with thick lime-plaster were noticed abutting to the southwestern part of one of the bastions. Southern and western sides of the fort-wall overlook a deep gorge caused by heavy waterflow during the rainy season, which seemingly served the purpose of the ditch around the fort. The area of northern and eastern sides of the fort is formed on a gradual slope of the hill down below which the village of Anangpur is situated. Because of the habitation activities of the village, traces of eastern and northern walls of the fort are not visible on the surface.

The two mounds, on the crest of the hillock within the fortification, one at the northern end and the other at the southern end, appear like watchposts. A few paleolithic stone tools were found there. Outlines of some of the constructions, including streets and chambers, near the only extant western gateway of the fort, were also observed. A circular copper coin was found at this spot which is definitely of Rajput origin. It has on obverse, a crude representation, possibly of Śiva with bull, and traces of Nāgarī legend on reverse. It seems to be an early Tomar coin type. Red ware potsherds of medium to coarse fabric comprising of storage jars, lids, cooking pots, basins, bowls, etc. are found in this (citadel) area of the fort. The absence of glazed ware at the site suggests the site to be a single-culture site of the Rajput period, bracketed between the 8th and 11th century AD.

It has been surmised (Dwivedi 1973: 189), on the basis of *Kuṭṭanīmata* written by Dāmodaragupta, the Prime Minister of Vinayāditya Jayāpīda (c. AD 779–813), the ruler of Kashmir, that the area of the Ḳurus was also called Anaṅga

Pradeśa. Possibly, therefore, Harshavardhana, who ruled from Thanesar, was called Anaṅga-Harsha—'devaniketanamanaṅga Harshe gate tridivalokam ...'

Various legends and genealogical lists give the name of the first ruler of the Tomar dynasty as Vilhaṇadeva, Bilandeva, Jājū or Jāula who seems to have acquired the title of Anaṅgapāla when he became the ruler of this area and became famous in history as Anang Pal I.

A number of Sanskrit texts on Śilpa-Śāstra mention the types and planning of forts. The Anangpur fort comes under the category of *giri-durga* or hill fort. About the planning of hill-forts, which can be located on the crest of the hill or in the middle of the hills or near the hill (*Mānasāra*-Durganiveśanam-46; Viśvakarmā Vāstuśāstra-dvādaś adurgavidhiḥ-3), the *Nāradaśilpśāstra* (Pañchavidhadurganirmāṇakrama-Kathanam-7) gives the details. It includes walls, gateways, watchposts, ditch, streets, palaces, temples, residences of nobles and generals and storage of treasury and other items. In Chapter 45 (Durga-prākārakalpanam-40) of *Samarāṅgaṇa Sūtradhāar* the hillforts have been described as the best among various categories of forts—'Sarveshāmeva durgāṇām Pārvatīyam praśasyate'. The *Viśvakarmā Vāstuśāstra* (dvādaśadurgavidhiḥ—4–5), while giving details of structures in a hill-fort, mentions about its facing which is towards the east or north side.

'Madhyasthadevaprāsādam devamandirabhūshitam
Mantryadiparivārāṇām bhavanādyaissamanvitam
Prāchīmukam prakartavyamathavottaradiṅmukham
Bhaṭaiḥ Khadgadharairanyaissamantātsaṁvṛtāṅgaṇam'.

The location of structures at the crest of the Anangpur fort on the eastern side, and the orientation of the fort and the streets in its citadel from north to south suggest that it faced east, overlooking the valley in its front, where a township flourished with rich agricultural fields in the midst of the Aravalli ranges. Further excavations will definitely throw important light on the architecture and archaeology of the area which may help in reconstructing the missing links of the Tomar history of the region as well as the prehistoric past of the entire region.

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PART VII

The Medieval and Modern History of Ancient Remains

The Later Histories of the Ashokan and Mehrauli Pillars

Upinder Singh

The Adventures of the Ashokan Pillars in Medieval and Modern Times

Ashoka would probably have been amazed (or more likely, extremely annoyed) if he had known what would happen to two of his edict-bearing pillars some fifteen centuries after his time. We are very fortunate in having an account of how the two Ashokan pillars were brought from Topra and Meerut to Delhi with great care and effort and installed there during the time of Firuz Shah Tughluq. Shams Siraj Afif tells in his chronicle the *Tarikh-i-Firuz Shahi* of how the Sultan noticed the two columns in the course of his military campaigns and had one (which came to be called the Minar-i-Zarin or Golden Column) transported and erected in his palace at Firuzabad near the banks of the Yamuna, and the other in his Kushk-i-Shikar or Hunting Palace.[1]

Afif writes that these two pillars dated from the time of the Pandavas, and recounts a tradition that they had been the walking sticks of the Pandava hero Bhima. We are told that the Sultan was filled with admiration when he saw the pillars and decided to move them to Delhi as trophies. The description of the moving of the Delhi—Topra (Minar-i-Zarin) pillar tells of orders issued to people living in and around Topra village, and also to soldiers, directing them to assemble at the column, bringing with them various implements and materials, including large quantities of silk cotton from the *semal* (*S. malabarica*) tree. When the earth around the column was carefully removed, it fell on the bed of silk cotton that had been prepared for it. It was then encased in reeds and raw hides and carefully moved onto a specially constructed carriage with forty-two wheels. Men pulled at the ropes attached to the wheels, and in this manner the pillar slowly made its way to the banks of the Yamuna. Here the Sultan came in person to meet it. The pillar was then heaved onto several boats tied together

Excerpted from Upinder Singh, *Ancient Delhi*, OUP, New Delhi, 1999, pp. 58–62, 81–3.

and taken by river to its new home in Delhi. At Firuzabad, it was raised to its present position in the palace complex with great ingenuity, skill, and labour.

The writing on the Ashokan pillars could no longer be read by Firuz Shah's time. Afif tells us that some Brahmins gave the interpretation that the inscription on one of them contained a prophecy that no one would be able to remove the pillar from its place till the time of a great king named Sultan Firuz. The reading was too contrived to convince anyone, even a king who might have found it flattering. Afif tells us that some years later, when the Mongol Timur invaded India, he visited the monuments of former kings and was very impressed by these remarkable pillars.

Yet another aspect of the medieval history of the two Ashokan pillars is inscribed on their surface. Below the Ashokan edicts, the Delhi-Meerut pillar bears three short early fourteenth century Sanskrit inscriptions. The first refers to a person named Virapala, son of a ruler of Sind. The second, also of the fourteenth century, refers to the writer as a gold-smith named Mala Saha. The third inscription belongs to the sixteenth century. It says that it was written by a person named Amara and contains certain words, the meaning of which is unclear. Who the people mentioned in these three inscriptions were and what they intended to convey through these inscriptions which they had inscribed on the Ashokan pillar, we do not know.

The Delhi-Topra pillar bears three twelfth century inscriptions of the Chauhan Rajput king Visaladeva alias Vigraharajaraja (IV).[2] In one of them, the king boasts of his conquests from the Himalayas to the Vindhyas and of his exterminating the *mlechchhas* (outsiders or barbarians, referring in this case to the Turks) and restoring Aryavarta—the land of the Aryas—to what its name signified. The pillar also bears two sixteenth-century epigraphs. The first is a short Sanskrit inscription giving the date and the name of the writer, a person named Ama. The second, longer inscription in mixed Sanskrit and Persian refers to Sultan Ibrahim and states that the inscription was written by Viyada, son of Sayana. There is also a reference to a person named Bahadur Khan. Sultan Ibrahim may be identified with the sixteenth century Lodi king of that name, while Bahadur Khan may have been a nobleman during his reign.

The medieval accounts of the moving of the Ashokan pillars to Delhi and the medieval inscriptions they bear introduce us to an important aspect of certain historical monuments—the changes and redefinition of what they mean and what they stand for. They show us how a monument of one age can be given an entirely new meaning in another. We can see this sort of thing around us even today, for instance in the conversion of medieval palaces into hotels. In this particular case, Firuz Shah Tughluq was impressed by two monolithic pillars made and erected over a thousand years before his time by a Mauryan emperor. He did not know what the original purpose of the pillars may have been; neither did he have any idea of what the writing on the pillar

said. He brought the columns to Delhi and had them set up in two prominent places. When the pillars were fixed in their new locales, Afif tells us that certain additions were made to them—ornamental friezes of black and white stone were added to the top, and a guided cupola was placed on the pinnacle. Changes in the physical appearance of the Ashokan pillars were accompanied by continuity and change in the meaning of the monuments. The pillars had been imperial monuments, symbols of a king's power and dominion in Ashoka's time. Firuz Shah Tughluq relocated them and took them over as monuments signifying his *own* power and dominion. But, in their newer medieval setting, the edict-bearing pillars were no longer conveyors of the *dhamma* message of the earlier king.

The adventures of the Delhi-Meerut pillar did not end with its journey from Meerut to Delhi. Writing in the 1860s, the great archaeologist Sir Alexander Cunningham describes it as lying in five pieces near Hindu Rao's house on the top of the hill.[3] He writes that according to popular belief, the pillar had broken into pieces due to the accidental explosion of a magazine of gun-powder during the time of the late Mughal king Farukhsiyar. The combined length of the five pieces was $32^{3}/_{4}$ ft, but the upper section of the middle pieces which bore Ashoka's edicts had been sawn off some years earlier and sent off to the Asiatic Society's museum in Calcutta. This piece was ultimately brought back to Delhi and the fragments of the pillar joined together. Cunningham notes in his reports that in his opinion, the reconstituted pillar should have been set up at Meerut, where it originally stood.

The story of ancient monuments includes the rediscovery of their historical significance in modern times. European travelers and visitors who saw the two Ashokan pillars in Delhi have left us with their impressions of what they saw. Referring to the Delhi-Topra pillar, the nineteenth-century European traveler Tom Coryat narrated in a letter to one L. Whittaker that in 'Delee' he saw a brazen pillar erected by the Macedonian king Alexander to mark his victory over his arch Indian adversary Porus.[4] Coryat passed on similar incorrect information to Chaplain Edward Terry who wrote in his journal that Coryat had told him that he had seen a pillar of *marble* with a Greek inscription. Coryat probably jumped to the conclusion that the pillar bore a Greek inscription because of the similarity between certain Greek and Brahmi letters. However, his claims about the contents of the inscription were obviously quite fanciful. It is also interesting to note that he thought that the pillar was made of either brass or marble. Another contemporary traveller, Bishop Heber, described the pillar as 'a high black pillar of cast metal' and likened it to the iron pillar in the Qutb complex. Such mistakes about the material of which the Delhi-Topra pillar was made may have been in part due to its unusual, lustrous surface.

The redefinition of the meaning of historical remains of the past is an ongoing process. We can end this account of the Ashokan pillars by taking

note of the fact that there are places where Ashokan pillars or fragments of such pillars are today being worshipped as Shiva *lingas*. What an amazing transformation of meaning!

The Iron Pillar in Medieval Legend

At some point of time, we don't know exactly when, the Gupta iron pillar got tied up in local legend and folk-lore with the Rajput king Anangapala of the Tomara clan and with a story of how the city of Delhi got its name. Writing in the nineteenth century, Cunningham recorded what he described as a 'universal tradition' current in his time that the iron pillar had been erected by the Rajput king Bilan Deo or Anangapala Tomara. A version of the legend is contained in Book III of the Rajasthani epic, the *Prithviraja Raso*, in an episode entitled *Killi-dhilli-katha*. The broad outline of the legend is as follows: A learned Brahmin told king Anangapala that the base of the pillar had been driven so deep into the ground that it rested on the hood of Vasuki, the king of serpents who supports the world from below. The pillar was immovable, and as long as the pillar stood, prophesied the Brahmin, so long would Anangapala's dominion last. Now, instead of being sensible and accepting this prophecy and leaving the pillar alone, Anangapala decided to check things out for himself. He ordered the pillar dug up. When the lowermost portion emerged from beneath the ground, it was covered with the blood of the serpent king Vasuki, whose head it had pierced. The king, realizing that he had made a terrible mistake, immediately ordered the pillar to be reinstalled. But every effort to fix the pillar firmly in the ground failed. The pillar remained loose (*dhili*) and, so the story concludes, in the looseness and shakiness of the pillar lies the origin of the name of the city of Delhi.

In another version of the legend, the prophecy is made not by some ordinary Brahmin but by the great sage Vyasa and it is a long nail or spike that pierces Vasuki's head. When restored, only nineteen fingers' length of the pillar goes into the ground. The sage tells the king that his dynasty would be unstable (*dhilli*) like the spike (*killi*) he had driven in, and that after nineteen generations, it would be supplanted by the Chauhans and then the Turks.[5]

There is a tradition that when Qutb-ud-din Aibak took over Delhi, he was told by helpful informants that Hindu rule would last as long as the iron pillar remained standing. We are told that the conqueror displayed his confidence in himself and contempt for the prophecy by allowing the pillar to stand. The Jami Masjid was built close to the pillar, and the courtyard of that mosque encloses it.

The history of the iron pillar of Chandra thus spans many ages as it came to be entwined with pan-Indian and local legends of the early medieval period. In modern times, the pillar has come to be connected with a different kind of

belief—that the person who stands with her back against it and manages to make the fingers of the two hands meet will have her wish come true. How serious this belief is, is of course a matter of conjecture. It is the kind of story that local tourist guides might have invented in order to liven things up for tourists. Regardless of its origins, it forms part of the modern folklore about Chandra's iron pillar.[6]

Notes and References

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2. Vigraharaja IV was the Chauhan king who captured Delhi from the Tomaras in the 12th century. He is referred to as Visala Devi in the traditional Rajasthani bardic histories.

3. It seems rather inappropriate to relegate Sir Alexander Cunningham to a footnote; the sole motive in doing so is not to break the flow of the main narrative. Cunningham (1814–93)—soldier, military surveyor and engineer, archaeologist, scholar—was a towering figure in Indian archaeology in the second half of the nineteenth century. He became the first Director-General of the Archaeological Survey of India in 1871. Using the accounts of the Chinese pilgrims Hsuan-tsang and Fa-hsien as a guide, Cunningham surveyed and documented details of hundreds of sites in north India in the course of a series of field surveys the sweep of which was unprecedented and remains unmatched till today. Cunningham's reports make fascinating and exciting reading and remain an important source of information on a variety of subjects, including the history of Delhi.

4. The adventurous and eccentric Thomas Coryat was a man who devoted his life to travelling and writing about his travels. He called himself 'the Odeombian Gallo-Belgic leg-stretcher,' alluding to his birth-place and his extensive travels on foot. His book on his continental walking tour through parts of France, Italy, Switzerland, and Germany was entitled *Coryal's Crudities, hastily gobled in five months travells*. Walking across Asia, he turned up in the court of the Mughal emperor Jahangir, and appears to have given a speech in Persian to the emperor in which he gave four reasons for his coming to India: to see the great Mughal emperor, the emperor's elephants and the Ganga, and to get the emperor's permission to visit Timur's tomb in Samarkand. Coryat lost many of his notes on his Asiatic journeys. One set was published during his life time, while extracts from the others appeared in print posthumously. Coryat died in Surat in December, 1617. He lies buried somewhere on the banks of the Tapti river.

5. These legends have been documented by Sir Alexander Cunningham in Vol. 1 of his reports (those of the years 1862–5).

6. A recent visit to the Qutb revealed that the Archaeological Survey has erected an iron railing around the pillar. This has put a forcible end to the popular practice referred to here.

In the Shadow of New Delhi: Understanding the Landscape through Village Eyes

Nayanjot Lahiri and Upinder Singh

Introduction

This chapter investigates village-level perceptions of the physical and archaeological landscape of a segment of the Faridabad district, in the Indian state of Haryana. This area, the Ballabgarh *tehsil*,[1] shares its border with Delhi, the Union Capital. Under the British government in India it used to form a part of the Delhi district. In addition to its geographical proximity, it has been perceived as having a history broadly identical to that of Delhi. Volume 1 of the *Imperial Gazetteer of India* (Gazetteer 1991: 281) is representative of this view:

> The history of the District is the history of Delhi city, of which it has from time immemorial formed a dependency. Even the towns of ... Ballabgarh and Faridabad hardly possess local histories of their own, apart from the city, in and around which are all its great antiquities.

Our village-to-village survey (Lahiri et al. 1996) revealed many unknown and unreported archaeological relics that suggest a cultural trajectory that in fact departs in many ways from that of Delhi. Ballabgarh is rapidly industrialising and the signs of her past are fast disintegrating. Nonetheless, rural Ballabgarh, containing as it does such population groups as the animal-grazing Gujars, Jat, Rajput and Meo agriculturists, snake-catchers or charmers called Saperas and Gaur Brahmins, offers a variegated human landscape.

This chapter springs from the assumption that the ways in which peasant and other social groups view their physical environment and the traces of earlier habitations it contains are just as integral to the reconstruction of the settlement history and landscape archaeology of a region as are the usual archaeological approaches. An integrated approach to a micro-segment such as Ballabgarh should ideally use the images of spaces and location held by

Excerpted from Peter J. Ucko and Robert Layton eds., *The Archaeology and Anthropology of Landscape*, Routledge London & New York, 1999, pp. 175–188.

groups living in towns and cities along with those of village people. There are two reasons why we focus here exclusively on rural perceptions. The villages of Ballabgarh still form the locales for the habitations of a large section of the *tehsil's* old population groups, and our archaeological observations (together with the limited documentary historical sources) suggest that certain features of the rural ethnographic present have a pre-modern reality.

Two aspects of these rural perception and representation will be analysed. The first relates to the physiographic duality of Ballabgarh and village perceptions of it. The second theme is concerned with the archaeological relics of that zone and with the straightforward and unusual ways in which these are understood and, in some cases, transformed through a filter of socio-religious beliefs and memories. In both cases, we highlight and historicise the disjunction between scholastic observation and ground-level perception. We believe that this has implications for, and requires acknowledgement by, geographers and archaeologists. Our approach will help in producing a perspective of the landscape that is more meaningful than the flat presentation of its formal and physical attributes.

The Physical Landscape and Rural Perceptions

Ballabgarh has two geographical faces (Figure 1). It is a land of hills and plains. The hills (locally called *pahadi*) are the northern-most outliers of the ancient Aravallis, a mountain range that originates in Gujarat and cuts across Rajasthan along an axis aligned north-northeast before reaching Haryana and terminating at Delhi. In Ballabgarh, the hills are not especially high. Gujari-wala Johar, at 318 m above sea level, is possibly one of the highest points. In recent decades, the hills have also been extensively quarried. Despite this, the *pahadi* still has a breadth of several kilometres, forming a compact rocky plateau between Surajkund and Sirohi. Its harsh character, with unconsolidated rocks and ravines and a sparse scrubby vegetation, imparts a specific geographical identity to the western edge of Ballabgarh. The vegetation is made up of species such as *kikar* (*Acacia arabica*), *karil* (*Capparis aphylla*) and *ber* (*Zizyphus nummularia*), although the tree cover around temple complexes can be visibly different. Tree species known locally as *gugal*, *gaund kathira*, *parsendhu*, *gular*, *khimi*, *imli*, *aam*, *kadamba*, *khajur* and *jamun* are encountered in the Parsaun ravine where Parasara rsi's *taposthana* (meditation spot) stands. A spectacular sacred forest of *dhau* or *dhoy* trees, spread over several acres and supported by three villages, still flourishes around Gudariya Baba's shrine at Mangar. In the midst of a thorny, scrub vegetation, these forest patches illustrate the limited but important ways in which the perceptions and ecological wisdom of rural inhabitants and temple priests have helped to sustain a variegated floristic composition. Various

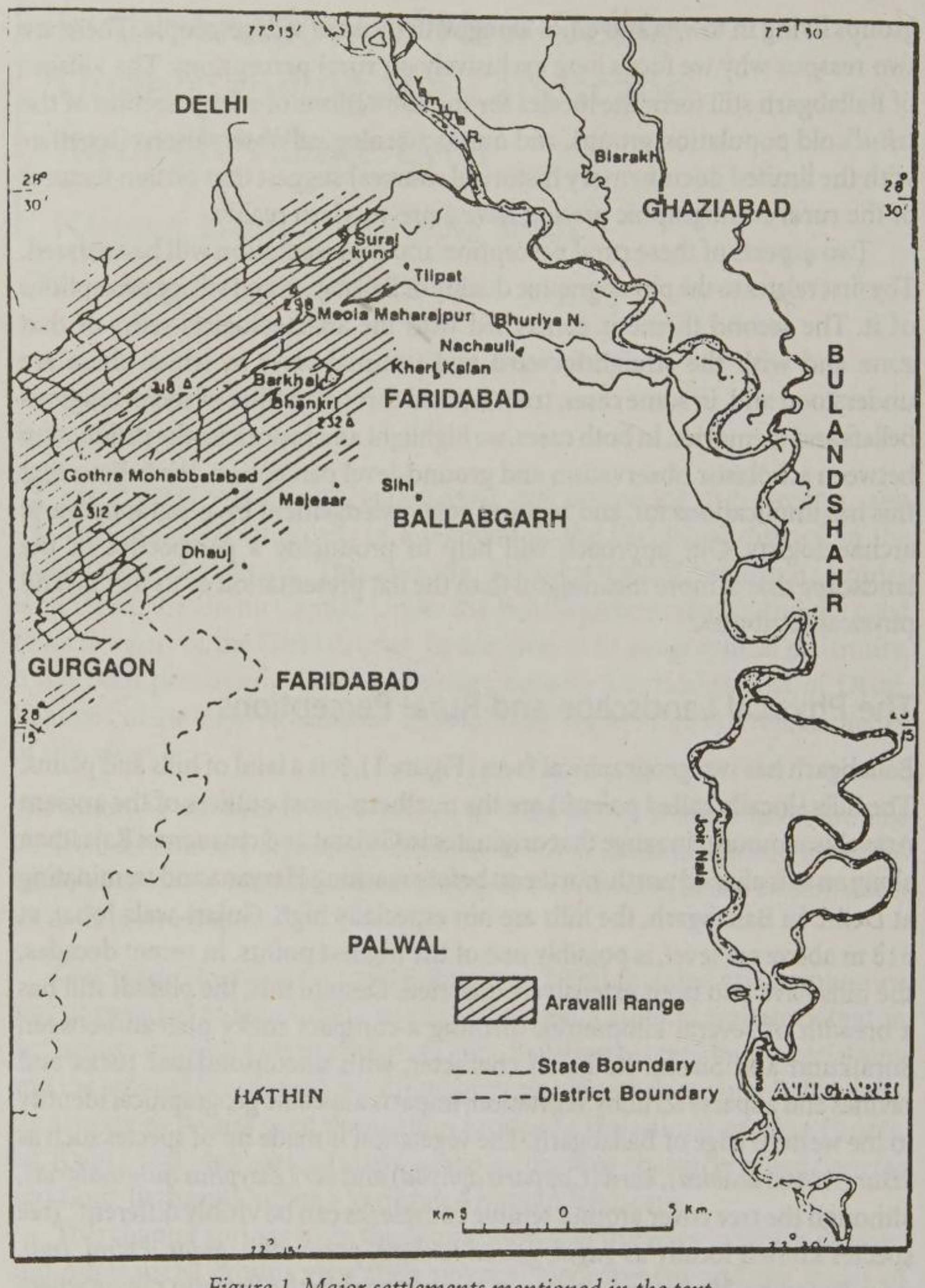

Figure 1. Major settlements mentioned in the text

streams, regarded as insignificant in geographical parlance because they are supposed to be seasonal and not perennial emanate from the hills at different points. We understand that there is some water flowing in many of them even during the summer months of May and June. Moreover these streams were considered important by local inhabitants in the past and still are today. A number of old mounds and villages are found in precisely those areas that form

part of their catchment zones (Lahiri et al. 1996). Altogether, there are about fifteen sites (some dating back to 500 BC) around the drainage zones of the hill channels. This distribution pattern cannot be regarded as fortuitous. Several historical shrines or cult spots have also clustered around the drainage channels. Flowing south-eastwards, their configuration can be clearly visualised from the detailed list provided in the first *Gazetteer of Delhi* (Gazetteer [1883–4] 1988: 5–6). One of them, the Bhuriya *nala*, is a tributary of the Yamuna river and can be encountered in the general vicinity of many of the surveyed villages in the riverine plain.

Lying beyond the rocky contours of the Aravalli to the east is the other face of Ballabgarh. This is the plains area, which extends to the Yamuna river. The plains consist of an older and higher alluvium (*bhangar*) stretching longitudinally and flaked on the eastern edge by a much narrower strip (*khadar*) which forms the active flood plain of the river. The *khadar-bhangar* demarcation line has, however, been a shifting one because the Yamuna waters have steadily moved eastwards. Today, the river forms the eastern margin of the *tehsil*, forming the line of demarcation between this part of Haryana and the state of Uttar Pradesh. The Ballabgarh hills also stand aloof from this eastward-flowing river. That this was not always so has been demonstrated in the Landsat MSS imagery of geologists (Grover and Bakliwal 1984: 151–3). Two major phases in the history of the Yamuna can be traced. Prior to about 2000 BC the river flowed 100 km west of Delhi and traversed Gurgaon and Faridabad before entering the southern Haryana plains. Scores of stone age sites in the hills bear testimony to this system of Yamuna palaeochannels which must have been extraordinarily important while they survived (see Chakrabarti and Lahiri 1987; Sharma 1993).

In the second phase, dated to about 4,000 years ago, the river ceased to flow through the hills and migrated to its present course, flowing within the Delhi limits and rounding the Agra canal weir at Okhla before entering Haryana. Even within the Ballabgarh plains, it has steadily shifted its course and was once decidedly more westerly in its upper course than it is today. In 1910–11, for instance, a channel of the Yamuna river meandered past the villages of Kabulpur Kalan, Kabulpur Kadar and Chirsi (Anon. 1912). Chirsi is mentioned in the late nineteenth century as a ferry point. Today, these villages lie a couple of kilometres to the west of the river. The creation of the Okhla barrage, which has regulated the discharge of water into the Yamuna to less than 200 cusecs in summer and about 4,100 cusecs during the monsoons, has also made the river more domesticated.

Interestingly enough, the delineation of *khadar* and *bhangar* land by rural residents does not follow the present geographical situation but is rather based on historical memory. At many villages where the flood waters of the Yamuna have not been sighted for decades, villagers still point to fields that they claim lie in the *khadar* zone. They also point to the old bed of the river through which

the Bhuriya *nala* now flows, not as the channel of the latter stream but as the old Yamuna. These perceptions underline the durability of the remembered past when the river undoubtedly did flow past their villages in spate and used to flood their fields. Such memories provide us with important clues for investigating the old course of the river. Villagers in the active *khadar* of the present Yamuna flood plain have similarly and on many occasions noted a *bhangar* component in their village, generally identified with the place where the village houses and structures stand. Because of a steady continuity of settlement over centuries, many such places are several metres high, forming typical archaeological mounds. It is unlikely that the river would submerge such spots, and thus the villagers' characterisation is entirely logical.

On the whole, Ballabgarh is an area of remarkable physiographic variegation. In an objective, dispassionate sense, there is very little doubt that the hills with their drainage channels appear to enclose a strikingly different world to the perennially watered plains of the Yamuna river. Superficially, this difference seems to have been strengthened by the larger dependence in the hill villages on pastoralism in contrast to the agricultural settlements of the plains. The stereotyped folklore that is found in nineteenth-century British records concerning communities like the hill Gujars and Meos also depicts them as thieving, cattle-stealing, groups (Rose [1883] 1990: 308) quite unlike the hard-working, cultivating groups of the lowlands.

Our field investigations have, however, revealed the important point that this geographic variation has not generated a perceptual barrier. Among rural groups in both segments, the land that is regarded as their own is defined as much by the Aravalli hills, and their various aspects, as by the Yamuna and its plains. A context made up of shared historical features and common elements in their respective cultural patterns may help to explain why cognitive barriers have not been significantly inserted into the clearly visible physiographic duality of Ballabgarh.

An important element of group identity in Ballabgarh is provided by the various clans to which different population groups belong, among them the Gujar, Meo, Rajput and Jat. There are other groups that cannot be designated as clans. The Brahims, 'degenerate' because they cultivate Brahmins called Tagas, Saperas, menials and untouchables are such groups. With the exception of the untouchables, about whom we were able to collect very little information, the other groups, like the major clans, identify with related caste and occupation groups in this zone. It is significant that the different population groups are evenly distributed. There is no major community that is found exclusively in one type of physiographic setting. The presence of the Gujars in the hills can be documented from the tenth and eleventh centuries onwards. Anangpur, Mangar and Gothra Mohabbatabad are among the old villages with substantial Gujar populations. There are, at the same time, plains Gujar villages such as Aitmadpur,

Tilauri Khadar and Salharawak. We know that the Gujar presence here is medieval because it is documented in the records of the *Bhats* (traditional genealogists) of this rural community. The distribution of Brahmins, the highest social group in terms of caste hierarchy, is similar. Tilpat is a plains village with a large number of Brahmins whose presence there is mentioned in the sixteenth-century treatise of Abul Faz'l (Allami 1949: 284). Similarly, in the foothill area Dabwa village was settled by Gaur Brahmins 550 years ago. Moreover, some of these communities sought integration with each other through various clan institutions. The villages with significant Meo populations in Ballabgarh are for example, linked by collateral kinship and descent through an institution called *Chaurasi*. One such grouping has its central platform at Dhauj (Shamsh 1983: 20). Among the villages that belong to it, there is an even number of hill and foothill settlements (Silokhri, Dhauj, Sirohi, Alampur, Khori) and plains villages (Madalpur, Fatehpur, Tikri Khera, Zakupur, Ladhiyapur). Many families also have land-holdings in both hills and the plains section. A family from the foothill village of Meola Maharajpur cultivates a segment that it owns in Dungarpur in the plains, just as an old resident family in Khanpur until recently had holdings in the vicinity of Khanpur, near the *pahadi* and in the *khadar* area east of the Yamuna. This system of land-holding is evocative of a pre-modern pattern in Ballabgarh. In the report of the land revenue settlement carried on in 1872–3 (Maconachie 1882: 72–9), there are several instances mentioned of superior land proprietors who were not resident in the villages where they held lands. The superior proprietor of the agricultural land of Phaphundah, for instance, was Ganga Bakhsh Jat, a resident of Sihi village. At Tajupur, the superior proprietors were from three villages: Kheri Kalan, Sherpur and Karaoli. The links between the hills and the plains extend into the geography of matrimonial alliances as well.

Another element that may help to explain why the hills and the plains are not perceived as bounded cultural worlds relates to the shared interaction of the two zones even prior to their recent history. The archaeological evidence relating to settlement distribution permits the area-wise and period-wise reconstruction shown in Table 1.

TABLE 1: Numbers of sites in the Faridabad district (Ballabgarh *tehsil*)

Period	Riverine plains	Higher plains	Hill zone
Late Harappan and painted grey ware (*1500–550 BC*)	6	3	0
North black polished ware and Early Historic (*550 BC–1 AD*)	4	2	1
Kushana-Gupta (*1st–6th centuries AD*)	11	8	5
Post-Gupta (*Several phases; Medieval to 18th century AD*)	24	18	10

The geographical spread of settlements in pre-modern Ballabgarh is evident enough. As is obvious, from the Kushana-Gupta phases of occupation, the number of sites that are located outside the riverine strip are evenly balanced with those near the Yamuna. More significantly, a majority of those in the higher plains area (Bajri, the Pali colony of Pir, Kheri Gujran, Madalpur and Qureshipur) are actually in the western segment which is close to the hills. There are also settlements in the Aravalli zone itself which are found on the hills, hill bases and the plateau areas. Dorji, for instance, is in an interior plateau among the hills above Dhauj, while the occupational remains at Paii Bas are spread along a high hill slope. Badri Khar stands in the immediate base area of the hills while Meola Maharajpur, slightly east of the rugged upland, overlies a few Aravalli ripples that soon merge into the plains. This distribution pattern also continues into the medieval phase.

Similar developmental trajectories do not, of course, suggest that the people of the hills and the plains were necessarily in close political and social contact. In fact, even in the Early Historic period, agriculture in and around the hills must have been much less significant than it was on the riparian plains of the Yamuna. At the same time, the hills here possess significant non-agricultural resources, and there is evidence to show that the plains settlements not only used these resources for various purposes in their normal day-to-day lives but also preferred the hills for ritual and political reasons. First, they provided a substantial raw-material source close to the minerally poor Yamuna plains. Quartzite, sandstone, slate, mica and crystal are some of the known resources (Gazetteer [1883–4] 1988: 16–17). There are numerous iron-ore nodules around Parasaun, and *silajit* (a rock-based medicinal substance) is found in the Mohabbatabad area. From the perspective of historical settlements, our field report's inventory of artefactual and structural relics (Lahiri et al. 1996) suggests that these resources formed part of the intercourse from the hills and it is likely that the return traffic included pottery and grain, among other items.

To these economic resources, the locational and political advantages of the uplands may also be added. On the western side they provide access to human groups from Rajasthan who have been an enduring feature of Ballabgarh's history. Many Gujars, Rajputs, Meos and Brahims, among others, state that their ancestral village was in that western state. Geographically, such movements from the dry, thirsty, Aravalli areas of Rajasthan into the alluvial plains make eminent sense because the Yamuna river, forming the eastern edge of Ballabgarh, is one of the major perennial rivers that is easily approachable from there. The accessible routes from Rajasthan across and around the Ballabgarh hills and the many topographic features that the former shares with this stretch of the Aravallis (among other things, they both have a common geographical base) are also well known. It is much more significant that the links with Rajasthan,

recorded through origin traditions and myths are an integral element of the cognitive world of rural Ballabgarh and are constantly kept in circulation. This is done by various means, in which the Bhat community plays a central role. Most of the Bhats hail from Rajasthan and are described as 'expert historians' in a recent volume on Haryana (Sharma and Bhatia 1994: 76). Genealogists by occupation, they have for several centuries meticulously noted the genealogies, births, deaths and movements of the Ballabgarh communities that patronise them. This community is nomadic moving from village to village, and at most places there are recitations of the origin myths of their various patrons. Through such discourses, the past or pasts of village communities are inserted into their cultural present. These myths geographically speaking, generally begin with migrations from the western Aravalli terrain, and with movements from place to place, before the family or groups of families settled in the Ballabgarh *tehsil*. Culturally there is much in this micro-segment that has both its origins and canonical setting in the hills. Rural notions of the landscape carry the marks of that fact.

Important shrines of interlocal worship are also located in the Ballabgarh Aravallis and beyond them both in the western areas of Gurgaon and in Rajasthan. In Ballabgarh itself, important religious shrines include the Siddha Baba complex at Satkund, Parasara rsi's *taposthana* at Parasaun, Uddalakamuni's *taposthana* in the Mohabbatabad hills and Dadi Piplasan's shrine at Dhauj. Most of these are old cult centres. The Satkund complex would date to the tenth or eleventh century AD when the Surajkund, a ritual tank fed by the waters of Satkund, was constructed. Parasara rsi's *taposthana* and the Dhauj shrine, with its Sultanate period structure, are also medieval; while Uddalakamuni's *taposthana* is marked by a fourth- or fifth-century AD *ekamukhalinga* (phallic emblem with the face of God Siva carved on it) and a twelfth-century inscription. That they continued to provide a focus for the religious life of Ballabgarh is evident from the first *Gazetter of Delhi* (Gazetteer [1883–4] 1988: 59). The Yamuna was supposed to be an important sacred river, whose banks were considered as providing an ideal locale for the performance of elaborate Vedic sacrificial sessions called *sattra* rituals (Roy 1993: 7, 9), but this has, interestingly, been ignored in the interlocal shrine geography of this stretch of the river. The elements that may explain this shrine distribution and its implications for reconstructing religious geography on the basis of textual images and traditions are worth investigating in detail (for a critique of textually constituted religious geography see Lahiri 1996). A socio-religious coherence has come to be attached to the hills, and shrines that appear remote even by present standards have thus enjoyed an adequate patronage. This is mainly because the Ballabgarh hills and plains are peopled by groups who are completely at home in such sequestered locales. There are also many similar shrines in Gurgaon and

Rajasthan. A number of communities journey annually into the hills that continue beyond and west and southwest of Ballabgarh, in the process renegotiating their cultural links with that terrain.

Finally, many population groups used the hills as a political base and a refuge during periods of trouble. The distribution of medieval fortifications from Anangpala's *Qila* (fort) in the Surajkund hills to Kot the stronghold of a Raja Gopala Singh, and even further in the Meo-inhabited Sirohi village, is strikingly suggestive of this. Various histories compiled during the centuries following the establishment of the Delhi Sultanate (thirteenth century AD onwards) also allude to the hills being a stronghold of recalcitrant communities. In the Tabakat-i Nasiri, for instance, the author Juzjani's patron Nasiru-d din Mahmud is not mentioned as pacifying people or areas in the Ballabgarh plains. Many of his nobles seemed, in fact, to have owned fiefs and gardens adjacent to the Yamuna (Elliot and Dowson 1869: 356–7). On the other hand, in the fifteenth year of Sultan Nasiru-d din Mahmud's reign (Hijra 658; i.e. AD 1260), Juzjani records that the distinguished noble, Ulugh Khan had to be sent 'to the hills of Delhi to chastise the rebel inhabitants of Mewat and to intimidate their Deo' (Elliot and Dowson 1869: 359). These hills are obviously those that were located to the south of the royal capital and must have included the Aravalli area that now forms part of western Ballabgarh. Incidentally, the perception of the hills as providing a refuge zone has continued into the present. As recently as 1946–7, many Muslims from plains villages took shelter there during episodes of communal violence.

Ballabgarh's visible surface, on which the hills from a distinct and separate geophysical facet from the plains, thus loses its meaning when it is enveloped in the social and cultural frames of reference through which the villagers have inscribed their notion of landscape. Regardless of their own physical location they consider the Aravallis and the Yamuna physical markers of their lived environment. We have tried to show some of the historical and cultural factors that have helped in producing this view of the landscape.

The Archaeological Landscape and Rural Perceptions

The archaeological landscape in Ballabgarh is understood both in ways readily comprehended within modern archaeological thinking and in more exotic ways. Mounds are generally understood as being sites of former settlements, an understanding that may be contextualised in terms of the lived experiences of rural residents where movement of villages has been common enough. Even in the last fifty years or so, the habitation areas of different rural groups have shifted. Among the reasons mentioned by villagers for such shifts are natural causes such as 'bad' water leading to infertility (Tilauri Khadar and Kheri Gujran),

epidemics (Sehatpur) and inundation by Yamuna flood waters (Dadsia). Other factors relate to socio-political events which include medieval population movements (as in Meola Maharajpur, where the Meos were uprooted by a Gujar community) and the more recent partition of India and Pakistan. The partition period is locally called *marshalla*, a corruption of the term 'martial law',[2] and several village sites (such as Agwanpur ka kheda and Baselwah) were abandoned in those violent years. Taken over in many such cases by acacia-dominated forest clumps, the palpable desolation still evident at such abandoned settlements is heightened when the extensive presence of medieval structures with Islamic features in Ballabgarh's old villages is contrasted with the very small number of Muslims who live there.

There are also ancient sites where structural remains and artefacts are perceived through traditional socio-religious associations and beliefs. At Dhauj, the Meo inhabitants recount an old tradition about the quartzite structure on the western edge of the village that dates to the thirteenth-fifteenth centuries AD. Originally domed and locally called the Dera, it is considered as being the overnight handiwork of a Jinn, a class of spirits that is regarded as belonging to the malevolent dead. Among other things, Jinns have no bones in their arms, only four fingers and no thumb (Rose [1883] 1990: 207). Similarly, local legend associates the village of Bishrakh with the father of Ravana. Ravana is the mythical transgressor in the Ramayana, the most popular epic of India, and is generally associated with the peninsular parts of the Indian subcontinent. Here, however, a spot thickly covered with medieval potsherds is pointed out as the place where Ravana was born. The village is situated on a mound with occupation layers that extend back to the painted grey ware phase (1000 BC) and continue into the Medieval period. From such deposits a large number of stone Siva *lingas* (phallic emblems of Siva) have been recovered, some of which can be seen in the open-air village shrine, along with a decapitated Nandi (the vehicle of Siva) bull-sculpture. Taken together, these seem to be the remnants of a medieval Siva temple. Since Ravana is popularly represented as a Siva devotee, these Siva-related relics are treated as material evidence for the presence of the mythical villain here. In Brahmanical tradition, Bishrakh would be geographically located in Kuru land, a segment that was 'Aryanised' quite early, unlike Ravana's kingdom of Lanka and the epic geography that has traditionally situated Ravana in peninsular India. Unintimidated by such traditions, villagers proudly proclaim a spot in their village as Ravana's *janma bhumi* (birthplace)! The 'miraculous' powers invested in iron slag from the old village mound of Sihi, which have been discussed elsewhere (Lahiri 1995: 129–30), provide another example of the ways in which local beliefs transform the meanings that archaeologists would read into artefacts of past cultures.

Sculptural relics are similarly, more often than not divested of their original

contextual associations. At Mawai, Hathin and Kheri Kalan, for example, motley collections of early medieval sculptural fragments recovered from the old mound or mounds of the village are placed in folk village shrines (*grama sthanas*) and worshipped as manifestations of the inhabited socially domesticated land and village. In some villages, as at Gharora single architectural fragments are similarly worshipped. The sculptural fragments attest to the existence of Brahmanical and Jaina temples in Ballabgarh between the seventh and thirteenth centuries AD. These probably perished during the foundation of the Sultanate of Delhi. For rural residents and outside observers they strikingly evoke the way in which Sultanate authority was articulated through the desecration of sacred spaces of the conquered populace. These archaeological remnants of ancient 'high culture' are still dramatically visible, but are situated in the arena of folk worship. They are, moreover, worshipped as representational forms of deities that bear no resemblance to their original iconic form. Ganesha, for instance, is worshipped on a mother-goddess shrine, while Vishnu has been regarded as the Devi (another goddess). At the local level, these examples speak volumes for the reception of images and the irrelevance of traditional scriptural sanctions that strictly forbid any worship of broken or mutilated images.

One may also tentatively suggest a reason for structural and artefactual elements being read in such unusual ways. To understand this, we must return briefly to the history of the zone. As is evident from its archaeological sequence, Ballabgarh has a long history (see Table 1). The distribution of settlements suggests that, since the Historical period, there has been a steady continuity at or around most of them, which has led to the formation of substantial mounds in many such locales. It is also fairly evident, however, that there were constant readjustments of population groups and demographic mobility between these stable locations. We are fortunate to have documentation of this in the genealogies of the old communities of the area which have been maintained by the Bhats. At Tilpat village (identified with Tilaprastha of the Mahabharata tradition that goes back to the latter part of the first millennium BC) there is, for instance a 30-m high mound. Limited excavations have established a 1000 BC cultural stratum there (Lal 1954–5: 141). One is also certain, on the basis of an archaeological reconnaissance carried out in 1994, that Tilpat remained largely inhabited well into the Medieval period. The old family trees of resident Brahmins, who constituted a substantial segment of the medieval village population, however, go back to only the early sixteenth century or thereabouts. The family tree of the late Pandit Nathu Singh Girdawar is a case in point. Traced back to AD 1525, to a person called Mukha, the family tree from AD 1525 till 1950 has been compiled by the present family members in the form of a flow chart. It is understandable, then, that such residents would not view various

archaeological indicators of the past or pasts of their habitation area in terms of their own community history or histories or with reference to the meanings that orthodox academic scholarship invests in them. Instead they view them through the prism of their traditional beliefs and in the process, alter the meanings that archaeologists would read into them.

Conclusion

Landscapes do not merely exist, they are made. Life histories and folk memories help in constituting them. In Ballabgarh, rural perceptions are grounded in such elements, which do not simply and mimetically reproduce the form and physical attributes of Ballabgarh's natural and archaeological landscape. On the contrary, they actively transform what is given in the topography and archaeology. In doing so they undermine certain 'logical' categories of meaning that are used to depict this land, just as they challenge the established prescriptions and prohibitions contained in the dominant Brahmanical 'Great Tradition'.

Notes

1. A *tehsil* is an administrative sub-division of a district. Two settlements that are mentioned in this chapter in fact lie outside the administrative boundaries of the district: Khanpur lies on the northwestern border of Faridabad and Bishrakh is situated east of the Yamuna but within the National Capital zone.

2. We owe this identification to Gyanendra Pandey, our colleague in Delhi University and a historian of modern India.

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